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INCORPORATING

MEDICINE AND THE MEDICAL AGE

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ORIGINAL COMMUNICATIONS.

A SAFE AND EFFICIENT INTENSIVE METHOD OF TREATING SYPHILIS.

BY JAY FRANK SCHAMBERG, M.D.,

Professor of Dermatology and Syphilology, Jefferson Medical College; Professor of Dermatology and Syphilology, Graduate School, University of Pennsylvania;

AND

DR. ROSE HIRSCHLER,

Physician in Charge of Gynecean Hospital, Philadelphia; Instructor in Dermatology and Syphilology, Graduate School, University of Pennsylvania.

In times gone by the treatment of syphilis consisted in the application of remedies to effect a disappearance of existing lesions and the continuance of the treatment for a certain time to prevent recurrences. With an expanded knowledge of the pathogeny of this disease, we may state our object to be the complete and permanent destruction of every spirochæte in the invaded host. Our ability to accomplish this extermination varies according to a number of factors, the most important of which are the age of the infection, the amount of treatment, and the anatomical location of the spirochætes within the body.

In the vast majority of cases of syphilis in the primary stage, before the Wassermann has become positive, cure can be effected by a relatively short course of intensive treatment. After the secondary stage, during which period the spirochætes are carried by the lymph and blood streams to various tissues and organs of the body and deposited there, the complete eradication of the parasites is correspondingly more difficult. When the spirochætes are lodged in the cortical brain cells and in other inaccessible crannies of the body, their complete eradication becomes extremely difficult and commonly impossible of accomplishment. The introduction by Ehrlich and his colleagues of the organic arsenicals, chiefly arsphenamine and neoarsphenamine, marked a new era in the treatment of the disease. There can be no doubt of the greater affinity of arsphenamine for the spirochæte than is possessed by mercury. Furthermore, by reason of its lesser affinity for the body cells, it can be administered in large doses. Mercury cannot be given intravenously in any dose at all comparable with arsphenamine without killing the patient. The high parasitotropic effect of arsphenamine and its low organotropic effect explain its great value in syphilis.

Syphilis can be cured by arsphenamine alone. One of the writers has reported a cure substantiated by the strictest criteria. That mercury, however, likewise exerts a curative influence upon the lesions of syphilis, and a destructive effect upon spirochætes, is proven by four hundred years of clinical experience. It is inferior to arsphenamine, and, moreover, spirochætes are more prone to become resistant to mercury than to arsphenamine. The literature of syphilis furnishes numerous instances of syphilitic lesions that could not be made to disappear even under massive doses of mercury. Mercury in large doses is prone to cause anemia, loss of weight, and physical depression. It

J. R., No. 59, Aged 34. Admitted Gynecean Hospital 1–10–19.

GUMMATA OF CERVIX.

1–11–19	.....	.....	.....	.....	Inunction	.....
1–12–19	.....	.....	.....	.....	Inunction	.....
1–13–19	Arsenobenzol	Intravenous	0.3	98.2–72–24	.....	.....
1–14–19	.....	.....	.....	.....	Inunction	.....
1–15–19	.....	.....	.....	.....	.....	Wassermann +4
1–17–19	Arsenobenzol	Intravenous	0.3	.....	.....	.....
1–18–19	.....	.....	.....	.....	Inunction	.....
1–19–19	.....	.....	.....	.....	Inunction	.....
1–20–19	Arsenobenzol	Intravenous	0.6	Diarrhea	.....	.....
1–21–19	.....	.....	.....	.....	Inunction	.....
1–22–19	Arsenobenzol	Intravenous	0.6	97 –72–22	.....	Wassermann +4
1–23–19	.....	.....	.....	.....	Inunction	.....
1–24–19	Arsenobenzol	Intravenous	0.4	97.2–80–18 Diarrhea	.....	.....
1–25–19	.....	.....	.....	.....	Inunction	.....
1–26–19	.....	.....	.....	.....	Inunction	.....
1–27–19	Arsenobenzol	Intravenous	0.3	.....	.....	.....
1–29–19	Arsenobenzol	Intravenous	0.3	98.2–80–24	.....	.....
1–30–19	.....	.....	.....	.....	Inunction	.....
1–31–19	Arsenobenzol	Intravenous	0.3	97.3–72–20	.....	.....
2– 1–19	.....	.....	.....	.....	Inunction	.....
2– 2–19	.....	.....	.....	.....	Inunction	.....
2– 3–19	Arsenobenzol	Intravenous	0.3	97.2–62–18	.....	.....
2– 4–19	.....	.....	.....	.....	Inunction	.....
2– 6–19	.....	.....	.....	.....	Inunction	.....
2– 7–19	Arsenobenzol	Intravenous	0.4	98.2–76–20	.....	.....
2– 8–19	.....	.....	.....	.....	Inunction	.....
2– 9–19	.....	.....	.....	.....	Inunction	.....
2–10–19	Arsenobenzol	Intravenous	0.3	98 –82–18	.....	.....
2–11–19	.....	.....	.....	.....	Inunction	.....
2–13–19	.....	.....	.....	.....	Inunction	.....
2–15–19	.....	.....	.....	.....	Inunction	.....
2–17–19	Arsenobenzol	Intravenous	0.3	98–82–20	.....	Wassermann +2
2–18–19	.....	.....	.....	.....	Inunction	.....
2–20–19	.....	.....	.....	.....	Inunction	.....
2–21–19	Arsenobenzol	Intravenous	0.3	98 –80–20	.....	.....
2–22–19	.....	.....	.....	.....	Inunction	.....
2–23–19	.....	.....	.....	.....	Inunction	.....
2–24–19	Arsenobenzol	Intravenous	0.3	97 –80–20	.....	Wassermann —
2–25–19	.....	.....	.....	.....	Inunction	.....
2–27–19	.....	.....	.....	.....	Inunction	.....
2–28–19	Arsenobenzol	Intravenous	0.2	98.2–76–20	.....	.....
3– 1–19	.....	.....	.....	.....	Inunction	.....
3– 2–19	.....	.....	.....	.....	Inunction	.....
3– 3–19	Arsenobenzol	Intravenous	0.3	97.3–72–18 Diarrhea	.....	Weak +
3– 4–19	.....	.....	.....	.....	Inunction	.....
3– 6–19	.....	.....	.....	.....	Inunction	.....
3– 7–19	Arsenobenzol	Intravenous	0.3	97.4–76–20	.....	.....
3– 8–19	.....	.....	.....	.....	Inunction	.....
3– 9–19	.....	.....	.....	.....	Inunction	.....
3–10–19	Arsenobenzol	Intravenous	0.3	97.4–80–18	.....	.....
3–11–19	.....	.....	.....	.....	Inunction	.....
3–14–19	Arsenobenzol	Intravenous	0.33	97.3–72–20	.....	Weak +
3–15–19	.....	.....	.....	.....	Inunction	.....
3–16–19	.....	.....	.....	.....	Inunction	.....
3–17–19	Arsenobenzol	Intravenous	0.3	97 –80–20	.....	Wassermann +1
3–18–19	.....	.....	.....	.....	Inunction	.....
3–20–19	.....	.....	.....	.....	Inunction	.....
3–21–19	Arsenobenzol	Intravenous	0.33	97.2–80–20	.....	.....
3–22–19	Arsenobenzol	Intravenous	.....	.....	Inunction	.....
3–23–19	.....	.....	.....	.....	Inunction	.....
3–24–19	Arsenobenzol	Intravenous	0.3	98.1–80–18	.....	.....
3–25–19	.....	.....	.....	.....	Inunction	.....
3–27–19	.....	.....	.....	.....	Inunction	.....
3–28–19	Arsenobenzol	Intravenous	0.3	98.2–82–22	.....	.....
3–29–19	.....	.....	.....	.....	Inunction	.....
3–30–19	.....	.....	.....	.....	Inunction	.....
3–31–19	Arsenobenzol	Intravenous	0.3	97.4–84–20	.....	Wassermann —
4– 3–19	.....	.....	.....	.....	Inunction	.....
4– 4–19	Arsenobenzol	Intravenous	0.3	97.4–68–20	.....	.....
4– 5–19	.....	.....	.....	Backache and nausea	Inunction	.....

J. R., No. 59, Aged 34. Admitted Gynecean Hospital 1–10–19.

GUMMATA OF CERVIX.

4– 6–19					Inunction	
4– 7–19	Arsenobenzol	Intravenous	0.3	97.1–80–22		
4– 9–19					Inunction	
4–10–19					Inunction	
4–12–19					Inunction	
4–13–19					Inunction	
4–15–19					Inunction	
4–17–19					Inunction	
4–19–19					Inunction	
4–20–19					Inunction	
4–22–19					Inunction	
4–16–19						Wassermann —

L. Z., No. 66, Aged 15, White. Admitted Gynecean Hospital 1–16–19.

LUES II CONDYLOMATA.

1–22–19	Arsenobenzol	Intravenous	0.3	97.4–92–20		Wassermann +4
1–23–19					Inunctions	
1–24–19	Arsenobenzol	Intravenous	0.3	98 –74–18		
1–29–19	Arsenobenzol	Intravenous	0.2	98.2–76–29		Wassermann +4
1–30–19					Inunctions	
2– 1–19					Inunctions	
2– 2–19					Inunctions	
2– 3–19	Arsenobenzol	Intravenous	0.2	97.4–70–18		
2– 4–19					Inunctions	
2– 6–19					Inunctions	
2– 7–19	Arsenobenzol	Intravenous	0.3	98.2–80–20		
2– 8–19					Inunctions	
2– 9–19					Inunctions	
2–10–19	Arsenobenzol	Intravenous	0.2	98.2–74–20		Wassermann +2
2–11–19					Inunctions	
2–13–19					Inunctions	
2–15–19					Inunctions	
2–17–19					Inunctions	Wassermann +1
2–18–19	Arsenobenzol	Intravenous	0.2	98.2–88–24		
2–19–19					Inunctions	
2–20–19					Inunctions	
2–21–19	Arsenobenzol	Intravenous	0.2	97.4–72–20		
2–22–19					Inunctions	
2–23–19					Inunctions	
2–24–19						Wassermann —
2–27–19					Inunctions	
2–28–19	Arsenobenzol	Intravenous	0.2	98.2–76–20		
3– 1–19					Inunctions	
3– 3–19	Arsenobenzol	Intravenous	0.2	97.4–88–20		Wassermann —
3– 4–19					Inunctions	
3– 6–19	Arsenobenzol	Intravenous	0.2	98 –84–20		
3– 8–19					Inunctions	
3–10–19	Arsenobenzol	Intravenous	0.3	97.4–76–20		
3–11–19					Inunctions	
3–13–19					Inunctions	
3–14–19	Arsenobenzol	Intravenous	0.33	98 –76–20		
3–15–19					Inunctions	
3–16–19					Inunctions	
3–17–19	Arsenobenzol	Intravenous	0.2	98.2–72–20		Wassermann —
3–18–19					Inunctions	
3–20–19					Inunctions	
3–21–19	Arsenobenzol	Intravenous	0.2	97.3–70–20		
3–22–19					Inunctions	
3–23–19					Inunctions	
3–25–19					Inunctions	
3–27–19					Inunctions	
3–29–19					Inunctions	
3–30–19					Inunctions	
3–31–19					Inunctions	Wassermann —
4– 3–19					Inunctions	
4– 5–19				100.2	Inunctions	
4– 6–19					Inunctions	
4–11–19					Inunctions	
4–12–19					Inunctions	
4–13–19					Inunctions	

A. S. S., No. 36, Aged 28, White. Admitted Gynecean Hospital 12–11–18.

ASYMPTOMATIC LUES.

4–15–18						Wassermann 3+
7– 2–18						Wassermann 3+
12–16–18	Arsenobenzol	Intravenous	0.6			
12–17–18					Inunction	
12–18–18	Arsenobenzol	Intravenous	0.3	98.3–68–24		
12–19–18					Inunction	
12–20–18	Arsenobenzol	Intravenous	0.6	98– 68–20		
12–21–18					Inunction	
12–22–18					Inunction	
12–23–18	Arsenobenzol	Intravenous	0.6	98 –52–18		
12–24–18					Inunction	
12–25–18					Inunction	
12–26–18					Inunction	Wassermann —
12–27–18					Inunction	
12–28–18					Inunction	
12–29–18					Inunction	
12–30–18	Arsenobenzol	Intravenous	0.3	97.4–72–22		Wassermann —
12–31–18					Inunction	
1–22–19						Wassermann —
3–28–19						Wassermann —

E. B., No. 31, Aged 45, White.

PAPULAR RASH ON BOTH LEGS ONLY; NO OTHER SYMPTOMS.

11–29–18						Wassermann 4+
12– 9–18	Arsenobenzol	Intravenous	0.3	98.2–60–10		Wassermann 4+
12–10–18					Inunction	
12–11–18	Arsenobenzol	Intravenous	0.3	97.4–72–18		
12–12–18					Inunction	
12–13–18	Arsenobenzol	Intravenous	0.3	99.3–92–28	Chills	
12–14–18					Inunction	
12–15–18					Inunction	
12–16–18						Wassermann 4+
12–17–18					Inunction	
12–18–18	Arsenobenzol	Intravenous	0.6	97.2–64–20		
12–19–18					Inunction	
12–20–18	Arsenobenzol	Intravenous	0.6	98 –80–22		
12–21–18					Inunction	
12–22–18					Inunction	
12–23–18	Arsenobenzol	Intravenous	0.6	97.4–64–16		
12–24–18					Inunction	
12–25–18					Inunction	
12–26–18					Inunction	
12–27–18					Inunction	
12–28–18					Inunction	
12–29–18					Inunction	
12–30–18	Arsenobenzol	Intravenous	0.3	98 –80–24	Diarrhea	Wassermann 1+
12–31–18					Inunction	
1– 1–19					Inunction	
1– 4–19					Inunction	
1– 5–19					Inunction	
1– 6–19	Arsenobenzol	Intravenous	0.3	98.2–70–22		
1– 7–19					Inunction	
1– 9–19					Inunction	
1–11–19					Inunction	
1–12–19					Inunction	
1–13–19	Arsenobenzol	Intravenous	0.3	98.3–76–22	Chills	
1–18–19					Inunction	
1–19–19					Inunction	
1–20–19	Arsenobenzol	Intravenous	0.6			Wassermann ?
1–21–19					Inunction	
1–23–19					Inunction	
1–25–19					Inunction	
1–26–19					Inunction	
1–27–19	Arsenobenzol	Intravenous	0.3			Wassermann ?
1–30–19					Inunction	
3– 5–19						Wassermann —

may, moreover, seriously and at times irreparably damage the kidneys. Numerous cases of fatalities from mercury have been published, but a much larger number, for various reasons, have never been brought to the attention of the profession.

THE STRIVING FOR A ROUTINE TREATMENT OF MAXIMUM EFFICIENCY.

The question, "What is the best method of treating syphilis?" would to-day receive no unanimity of reply. A critic once said of a book, "It contained many ideas, but no idea." There are many methods of treating syphilis, but there is no method. Our experience, since the introduction of arsphenamine, has not been sufficiently analyzed, studied, compared and crystallized to enable any one to enunciate a definite programme of treatment, particularly with respect to the dosage and frequency of arsphenamine administration. Advances are being made, but the status of the question is still tentative.

Many experienced clinicians give weekly injections of arsphenamine in full or smaller doses for varying periods of time. Pollitzer of New York has specially advocated an intensive treatment consisting of a full dose of arsphenamine on three successive days, with later repetitions when necessary. Theoretically the principle of massive sterilization of the spirochætes by such a method has much to recommend it. With improvements that are sure to be made in the preparation of arsphenamine, the time will doubtless come when a product of such low toxicity will be produced that intensive treatment of this character will be possible, with complete safety to the patient.

We desire to present some observations on a middle-ground procedure which gives to the patient an intensive treatment, and at the same time a considerably greater protection against possible adverse accidents. It consists of the concomitant use of arsphenamine and mercury, but each in such a manner as to minimize the liability

M. C., No. 9, Aged 22, White.

ASYMPTOMATIC LUES.

11–21–18	Arsenobenzol	Intravenous	0.5	100.4–104–24 Nausea and vomiting	.....	Wassermann 2+
11–25–18	Arsenobenzol	Intravenous	0.3	None	.....	Wassermann 2+
11–26–18	.....	.....	.....	.....	Inunction	.....
11–27–18	Arsenobenzol	Intravenous	0.6	None	Inunction	Wassermann 2+
11–28–18	.....	.....	.....	.....	Inunction	.....
11–29–18	.....	.....	.....	.....	Inunction	.....
11–30–18	.....	.....	.....	.....	Inunction	.....
12– 2–18	.....	.....	.....	.....	.....	Wassermann 1+
12– 4–18	Arsenobenzol	Intravenous	0.3	None	.....	W'm'n wkly pos.
12– 6–18	Arsenobenzol	Intravenous	0.4	None	.....	W'm'n wkly pos.
12– 9–18	Arsenobenzol	Intravenous	0.3	None	.....	W'm'n wkly pos.
12–11–18	Arsenobenzol	Intravenous	0.3	None	.....	W'm'n wkly pos.
12–13–18	Arsenobenzol	Intravenous	0.3	None	.....	W'm'n wkly pos.
12–16–18	Arsenobenzol	Intravenous	0.6	None	.....	W'm'n d'btful 1+
12–18–18	Arsenobenzol	Intravenous	0.3	None	.....	W'm'n d'btful 1+
12–20–18	Arsenobenzol	Intravenous	0.6	None	.....	.....
12–23–18	Arsenobenzol	Intravenous	0.6	None	.....	.....
12–12–18	.....	.....	.....	.....	Inunction	.....
12–14–18	.....	.....	.....	.....	Inunction	.....
12–15–18	.....	.....	.....	.....	Inunction	.....
12–17–18	.....	.....	.....	.....	Inunction	.....
12–21–18	.....	.....	.....	.....	Inunction	.....
12–22–18	.....	.....	.....	.....	Inunction	.....
12–24–18	.....	.....	.....	.....	Inunction	.....
12–25–18	.....	.....	.....	.....	Inunction	.....
12–26–18	.....	.....	.....	.....	Inunction	.....
12–27–18	.....	.....	.....	.....	Inunction	.....
12–28–18	.....	.....	.....	.....	Inunction	.....
12–29–18	.....	.....	.....	.....	Inunction	.....
1– 6–19	.....	.....	.....	.....	.....	Wassermann —

of damage to the patient. After all, in our laudable desire to destroy the parasite of syphilis we must be careful not to permanently injure the organs of the host. The spirochæte is vulnerable both to arsphenamine and mercury; in the language of Ehrlich it has an arseno-receptor and a mercuro-receptor. In the use of the two drugs concomitantly we shoot with two arrows, and if one fails of the mark the other may reach it.

We are not unmindful of the warning of Wechselmann against the joint use of these two remedies. Wechselmann contends that the vigorous use of mercury prior to arsphenamine, or with it, may so impair the integrity of the renal function that the kidneys may fail to properly eliminate the arsphenamine, and arsenic poisoning may result. We believe his reasoning to be correct to the extent that if mercury is used in such a manner as to damage the kidneys serious results may follow the use of arsphenamine. We feel, however, that this contingency can be avoided.

Our plan is to use intravenous injections thrice weekly, of approximately 0.3 gramme arsphenamine, and to give inunctions of mercury on the alternate days. We believe, from our experience with this method, that efficiency and safety are better combined than by the more intensive use of either

J. T., No. 69, Aged 24, White. Admitted Gynecean Hospital 1–17–19.

ASYMPTOMATIC LUES.

1–13–19	.....	.....	.....	.....	.....	Wassermann 4+
2– 8–19	.....	.....	.....	.....	Inunction	.....
3– 5–19	Arsenobenzol	Intravenous	0.33	98.3–80–24	.....	Wassermann 4+
3– 6–19	.....	.....	.....	.....	Inunction	.....
3– 7–19	Arsenobenzol	Intravenous	0.3	98.4–80–24	.....	.....
3– 8–19	.....	.....	.....	.....	Inunction	.....
3– 9–19	.....	.....	.....	.....	Inunction	.....
3–10–19	Arsenobenzol	Intravenous	0.3	98.2–92–18	.....	.....
3–11–19	.....	.....	.....	.....	Inunction	.....
3–12–19	Arsenobenzol	Intravenous	0.3	98 –76–20	.....	.....
3–14–19	.....	.....	.....	.....	Inunction	.....
3–14–19	Arsenobenzol	Intravenous	0.33	98 –76–20	.....	Wassermann 3+
3–15–19	.....	.....	.....	.....	Inunction	.....
3–17–19	Arsenobenzol	Intravenous	0.3	98.2–88–20	.....	.....
3–18–19	.....	.....	.....	.....	Inunction	.....
3–19–19	Arsenobenzol	Intravenous	0.4	98 –74–18	.....	Wassermann 4+
3–21–19	Arsenobenzol	Intravenous	0.33	98 –90–20	.....	.....
3–24–19	Arsenobenzol	Intravenous	0.3	98.2–92–20	.....	Wassermann 4+
3–25–19	.....	.....	.....	.....	Inunction	.....
3–26–19	Arsenobenzol	Intravenous	0.3	98.3–70–18	.....	.....
3–27–19	.....	.....	.....	.....	Inunction	.....
3–28–19	Arsenobenzol	Intravenous	0.3	98.1–80–20	.....	.....
3–31–19	.....	.....	.....	.....	.....	.....
4– 1–19	Arsenobenzol	Intravenous	0.3	98.2–74–18	.....	.....
4– 2–19	Arsenobenzol	Intravenous	0.3	98 –76–20	.....	.....
4– 3–19	.....	.....	.....	.....	Inunction	.....
4– 4–19	Arsenobenzol	Intravenous	0.3	98 –88–20	.....	.....
4– 5–19	.....	.....	.....	103 4/5	Inunction	.....
4– 6–19	.....	.....	.....	100.2–98–22	Inunction	.....
4– 7–19	Arsenobenzol	Intravenous	0.3	98.2–92–24	.....	Wassermann 1+
4– 8–19	.....	.....	.....	.....	Inunction	.....
4– 9–19	Arsenobenzol	Intravenous	0.3	98.1–82–24	.....	.....
4–10–19	.....	.....	.....	.....	Inunction	.....
4–11–19	Arsenobenzol	Intravenous	0.6	98.3–80–24	.....	.....
4–12–19	.....	.....	.....	.....	Inunction	.....
4–13–19	.....	.....	.....	.....	Inunction	.....
4–14–19	Arsenobenzol	Intravenous	0.3	98.2–72–20	.....	Wassermann —
4–14–19	.....	.....	.....	.....	Inunction	.....
4–16–19	Arsenobenzol	Intravenous	0.3	98 –80–20	.....	.....
4–18–19	.....	.....	.....	.....	Inunction	.....
4–20–19	.....	.....	.....	.....	Inunction	.....
4–21–19	Arsenobenzol	Intravenous	0.3	98.1–78–20	.....	.....
4–22–19	.....	.....	.....	.....	Inunction	.....
4–24–19	.....	.....	.....	.....	.....	Wassermann ?

M. L., No. 140, S., White. Admitted Gynecean Hospital 4–24–19.

ASYMPTOMATIC LUES.

4–24–19				Inunction	
4–26–19				Inunction	
4–27–19				Inunction	
4–29–19				Inunction	
4–30–19	Arsenobenzol	Intravenous	0.3		Wassermann 4+
5– 1–19				Inunction	
5– 2–19	Arsenobenzol	Intravenous	0.3		
5– 3–19				Inunction	
5– 4–19				Inunction	
5– 5–19	Arsenobenzol	Intravenous	0.3		Wassermann 2+
5– 6–19				Inunction	
5– 7–19	Arsenobenzol	Intravenous	0.3		
5– 8–19				Inunction	
5– 9–19	Arsenobenzol	Intravenous	0.3		
5–10–19				Inunction	
5–11–19				Inunction	
5–12–19	Arsenobenzol	Intravenous	0.3		Wassermann 1+
5–13–19				Inunction	
5–14–19	Arsenobenzol	Intravenous	0.3		
5–15–19				Inunction	
5–16–19	Arsenobenzol	Intravenous	0.3		
5–17–19				Inunction	
5–18–19				Inunction	
5–19–19	Arsenobenzol	Intravenous	0.3		

M. P., No. 117, Aged 18, White.

ASYMPTOMATIC LUES.

3–19–19					Wassermann 3+
3–23–19	Arsenobenzol	Intravenous	0.33		
3–24–19					Wassermann 4+
3–25–19				Inunction	
3–26–19	Arsenobenzol	Intravenous	0.3		
3–28–19	Arsenobenzol	Intravenous	0.3		
3–29–19				Inunction	
3–30–19				Inunction	
3–31–19	Arsenobenzol	Intravenous	0.3		
4– 1–19				Inunction	
4– 2–19	Arsenobenzol	Intravenous	0.3		
4– 3–19	Arsenobenzol	Intravenous	0.3		
4– 4–19				Inunction	
4– 5–19				Inunction	
4– 7–19				Inunction	Wassermann 2+
4– 8–19	Arsenobenzol	Intravenous	0.3		
4– 9–19	Arsenobenzol	Intravenous	0.3		
4–10–19				Inunction	
4–11–19	Arsenobenzol	Intravenous	0.6		
4–12–19				Inunction	
4–13–19				Inunction	
4–14–19	Arsenobenzol	Intravenous	0.3		Wassermann 2+
4–15–19				Inunction	
4–16–19	Arsenobenzol	Intravenous	0.3		
4–17–19				Inunction	
4–18–19				Inunction	
4–19–19				Inunction	
4–20–19				Inunction	
4–21–19					Wassermann 3+
4–22–19	Arsenobenzol	Intravenous	0.3		
4–22–19				Inunction	
4–23–19	Arsenobenzol	Intravenous	0.3		
4–24–19				Inunction	
4–25–19	Arsenobenzol	Intravenous	0.3		
4–26–19				Inunction	
4–27–19				Inunction	
4–28–19	Arsenobenzol	Intravenous	0.3		Wassermann 2+
4–29–19	Arsenobenzol	Intravenous	0.3		
4–30–19	Arsenobenzol	Intravenous	0.3		
5– 2–19	Arsenobenzol	Intravenous	0.3		
5– 3–19				Inunction	

M. P., No. 117, Aged 18, White—Continued.

ASYMPTOMATIC LUES.

5– 4–19				Inunction	
5– 5–19	Arsenobenzol	Intravenous	0.3		Wassermann —
5– 6–19				Inunction	
5– 7–19	Arsenobenzol	Intravenous	0.3		
5– 8–19				Inunction	
5– 9–19	Arsenobenzol	Intravenous	0.3		
5–10–19				Inunction	
5–11–19				Inunction	
5–12–19	Arsenobenzol	Intravenous	0.3		
5–13–19				Inunction	
5–14–19	Arsenobenzol	Intravenous	0.3		

A. V., No. 28, Aged 18, White. Admitted Gynecean Hospital 12–6–18.

ASYMPTOMATIC LUES.

11–30–18							Wassermann +4
12– 9–18	Arsenobenzol	Intravenous	0.3	98 –60–20			
12–10–18						Inunction	
12–11–18	Arsenobenzol	Intravenous	0.3	98 –80–20			Wassermann +3
12–12–18						Inunction	
12–13–18	Arsenobenzol	Intravenous	0.3	97.4–68–24	Chills		
12–14–18					Diarrhea	Inunction	
12–15–18						Inunction	
12–16–18	Arsenobenzol	Intravenous	0.6	98.2–72–20	Chills Diarrhea		Wassermann +2
12–17–18						Inunction	
12–18–18	Arsenobenzol	Intravenous	0.6	98.3–72–22	Diarrhea		Wassermann +2
12–19–18						Inunction	
12–20–18	Arsenobenzol	Intravenous	0.6	98.1–71–18		Inunction	
12–21–18						Inunction	
12–22–18						Inunction	
12–23–18	Arsenobenzol	Intravenous	0.6	98.2–60–16			Wassermann —
12–24–18						Inunction	
12–25–18						Inunction	
12–26–18						Inunction	
12–27–18						Inunction	
1–16–19							Wassermann —
3–17–19							Wassermann —
3–28–19							Wassermann —

drug singly. We believe that inunctions should be employed rather than insoluble injections of mercury, for the reason that calomel, gray oil, or salicylate of mercury, once deposited in the muscles, continues to be absorbed for a number of weeks. An irritant effect upon the kidneys, with interference of renal function, might readily prevent the prompt elimination of arsphenamine and lead to severe and fatal reactions. Mercurial inunctions can be promptly suspended when albuminuria occurs, but muscular deposits of mercury continue to be absorbed.

We present herewith a number of charts of patients which appear to us to indicate a higher degree of therapeutic potency exerted by this method than we have achieved by any other. We have found that most patients will tolerate three or even four fractional doses of arsphenamine and three or four inunctions a week, without much disturbance. All of our patients were hospital cases and under close medical surveillance. Thorough urinary examinations were made frequently.

In a high percentage of our cases we have been enabled to reduce 4 + Wassermann reactions to negative or at least weak positives in one to two months of intensive treatment. Most of the patients were "filles publiques" who had been arrested for soliciting on the streets, and the date of the infection, and indeed the

existence of the infection itself, was unknown to them. The vast majority of cases had asymptomatic or so-called latent lues. We realize that the reduction of a strongly positive Wassermann to a negative does not necessarily mean the extinction of the disease. A long period of observation and of serologic tests, both of the blood and the spinal fluid, is necessary before such a pronouncement can be made. We furthermore realize that it is only under specially favorable conditions that an intensive treatment of this character can be carried out, inasmuch as it interrupts the normal routine of the patient's life. Nevertheless, many patients are willing to sacrifice almost anything to be cured of syphilis. Where persistently positive Wassermann reactions are due to the presence of spirochætes in the central nervous system, it may be necessary to employ intraspinal medication in conjunction with other treatment to effect the removal of antibody from the blood.

Administration by Rectum.—A number of French physicians, as well as others, have reported the results of the use of arsphenamine and neoarsphenamine by rectal injection. Some of the writers have been most enthusiastic in their reports.

We have given a rather thorough trial of this method upon a number of patients, and we regret to say that the results were most disappointing. It is true that one is able to effect a disappearance of syphilitic lesions, but they disappear most slowly.

L. S., American, White, Aged 23, Married. Admitted 3–5–19.

3– 5–19			Wassermann 4+
3– 7–19	Arsenobenzol by bowel	0.4 gm.	
3–15–19	Arsenobenzol by bowel	0.4 gm.	
3–16–19	Arsenobenzol by bowel	0.4 gm.	
3–17–19	Arsenobenzol by bowel	0.6 gm.	
3–18–19	Arsenobenzol by bowel	0.6 gm.	
3–19–19	Arsenobenzol by bowel	0.6 gm.	
3–20–19	Arsenobenzol by bowel	0.6 gm.	
3–21–19	Arsenobenzol by bowel	0.6 gm.	
3–23–19	Arsenobenzol by bowel	0.6 gm.	
3–26–19	Arsenobenzol by bowel	0.6 gm.	
3–28–19	Arsenobenzol by bowel	0.6 gm.	
3–29–19	Arsenobenzol by bowel	0.6 gm.	
3–30–19	Arsenobenzol by bowel	0.6 gm.	
3–31–19	Arsenobenzol by bowel	0.6 gm.	
4– 1–19	Arsenobenzol by bowel	0.6 gm.	
4– 5–19			Wassermann 4+

G. D., Negro, Aged 21, Married. Admitted W. H. V. W. 3–5–19.

MUCOUS PATCHES IN THROAT, TONSILS, UVULA; SEVERE CASE.

3– 5–19			Wassermann +4
3– 7–19	Arsenobenzol by bowel	0.4	
3–13–19	Arsenobenzol by bowel	0.4	
3–14–19	Arsenobenzol by bowel	0.4	
3–15–19	Arsenobenzol by bowel	0.4	
3–16–19	Arsenobenzol by bowel	0.4	
3–17–19	Arsenobenzol by bowel	0.4	
3–18–19	Arsenobenzol by bowel	0.6	
3–19–19	Arsenobenzol by bowel	0.6	
3–20–19	Arsenobenzol by bowel	0.6	
3–31–19	Arsenobenzol by bowel	0.6	
4– 1–19	Arsenobenzol by bowel	0.6	
4– 2–19	Arsenobenzol by bowel	0.6	
4– 3–19	Arsenobenzol by bowel	0.6	
4– 4–19	Arsenobenzol by bowel	0.6	
4– 5–19	Arsenobenzol by bowel	0.6	
4– 6–19	Arsenobenzol by bowel	0.6	
4–28–19	Arsenobenzol by bowel	0.6	Wassermann +4

In one patient with condylomata about the vulva, anus and thighs, three 0.4 gm. and seven 0.6 gm. arsphenamine injections were given within sixteen days. At the end of this time the condylomata had almost gone. Five more 0.6 gm. doses effected their disappearance.

Our conclusions are that the rectal administration of arsphenamine or neoarsphenamine is an extremely feeble method of administering these drugs. A certain or rather uncertain amount of arsphenamine is absorbed into the blood (for we have found arsenic in the urine some hours after the first administration), but the quantity is obviously too small to be at all comparable in its effect with the intravenous administration. In patients in whom it is impossible for one or another reason to use the drug by superior routes, this method can be used, but mercurial treatment should be conjoined, as reliance on arsphenamine by bowel might fail to check dangerous syphilitic manifestations.

HOW SHALL WE BEST TREAT SKIN CANCERS ABOUT THE EYE?

BY WILLIAM NEILL, JR., M.D., BALTIMORE, MARYLAND.

Epitheliomata arising on the eyelids or on or near the canthi have always been an obstacle to surgeons and dermatologists in deciding what method of treatment should be followed. This condition is a frequent one and is seen more often in people past fifty years of age. They are usually basal-celled and grow slowly for a long time, often at last, whether subjected to irritation or not, take on a rapid growth and terminate in a painful and horrible death. All agree that such conditions should receive prompt attention during their comparatively benign stage, and before active proliferation has taken place. The layman at large realizes the importance of this, just as he does the importance of early consultation with a surgeon for appendicitis or strangulated hernia.

Various remedies have been attempted, such as the electric needle, Paquelin cautery, CO_2 snow, caustic pastes, and the high-frequency current. None of these have proven successful, and in fact often stimulate the growth to a more rapid proliferation. Their removal by surgery, either with the knife or cautery knife, has proven the most successful and has been generally adopted. But what shall we say to the mutilation caused by surgery when a wide excision is made, or to the risk of return, when the surgeon is overeager to avoid deformity? Then, also, often the growth will involve so much skin surface as to make closure impossible.

The risk of recurrence in all of these cases is great, and it is often necessary to perform an extensive mutilating operation, to be followed with skin or tissue grafts which at their best are most unsatisfactory from any plastic standpoint, and the

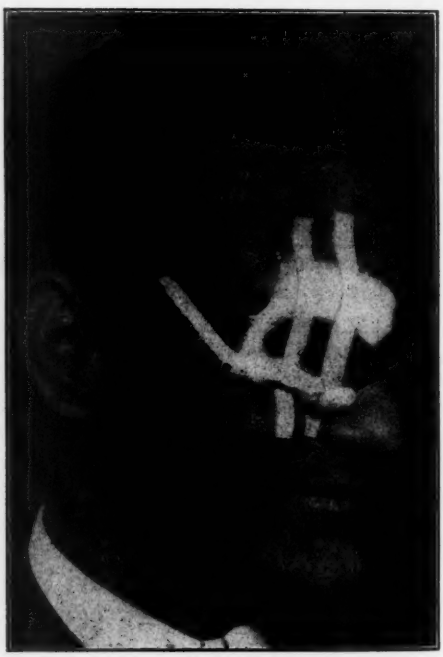
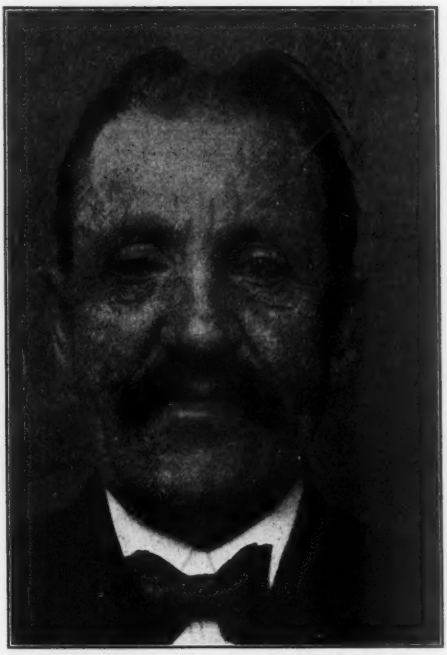
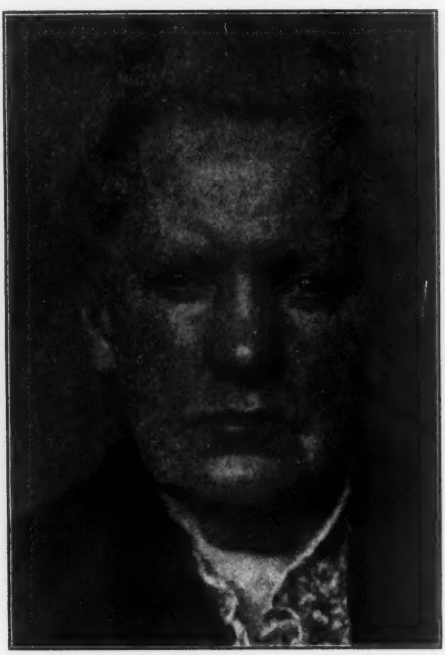


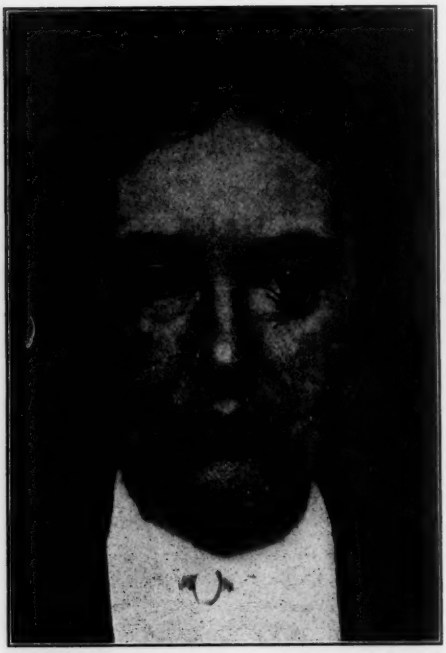
FIG. 1.—Epithelioma outer canthus right eye. Capsule containing 200 mgms. radium applied directly over lesion; 2 mm. lead plate placed over the eye for protection.

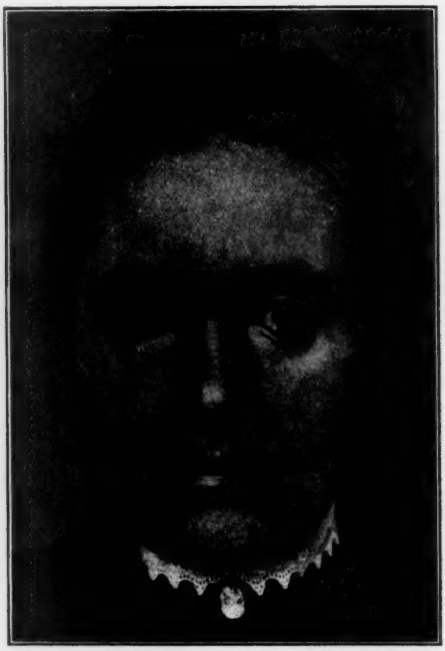


CASE I.—Patient 68 years of age. History number 1538. First seen March 20, 1915. Diagnosis: epithelioma upper right eyelid. Treated March 29, 1915, with 564 mgms. of radium for one hour. Second photograph taken June 3, 1915. No further treatment. No return to date.

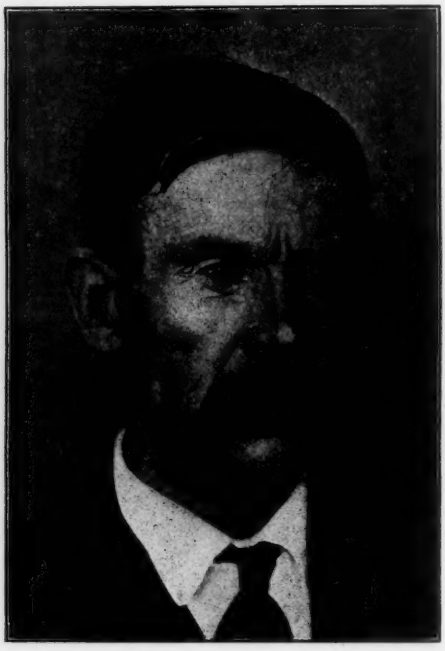


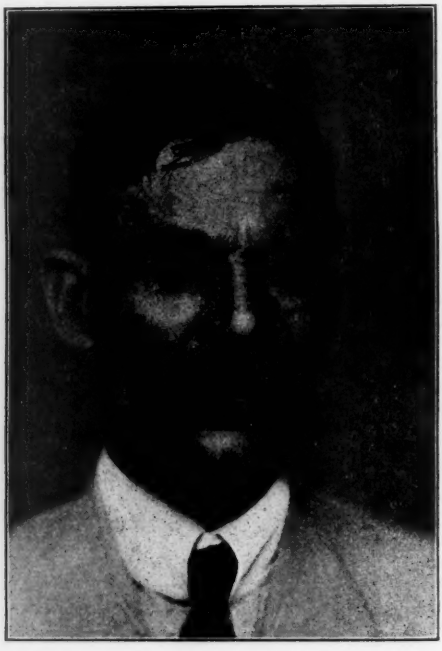
CASE II.—Patient 64 years of age. History number 2806. First seen September 22, 1916. Diagnosis: epithelioma inner canthus right eye. Treated September 22, 1916, with 259 mgms. of radium for 40 minutes. Received seven treatments in all; the last October 22, 1917. Second photograph taken January 5, 1918. No return to date.



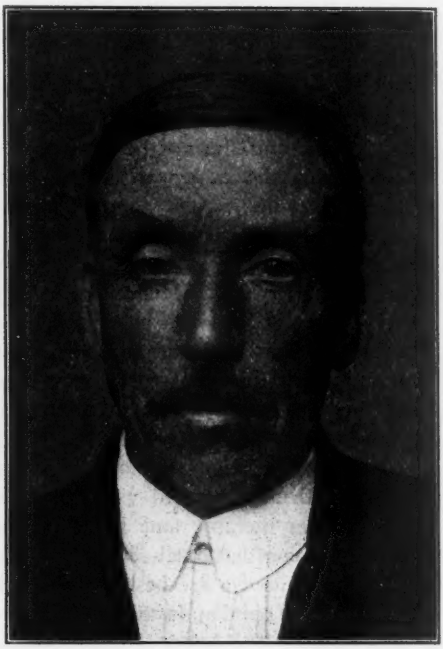


CASE III.—Patient 54 years of age. History number 1977. First seen October 15, 1915. Diagnosis: epithelioma of outer canthus of right eye. The left lower lid everted and discharge of tears. Was treated with cancer paste six years previously for epithelioma. Treated October 15, 1915. Four treatments in all, the last one February 9, 1916. Second photograph taken March 17, 1916. No return to date.

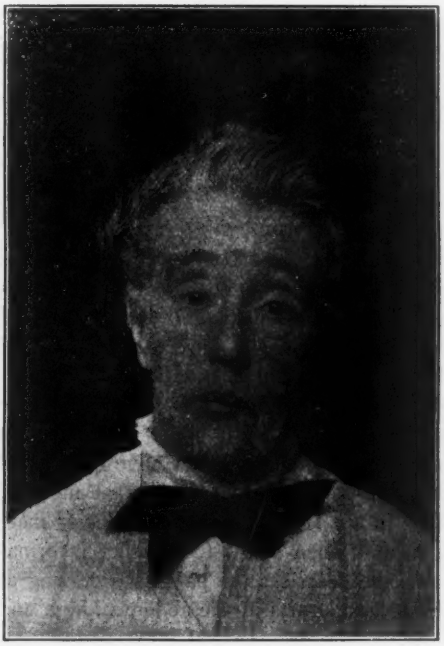




CASE IV.—Patient 53 years of age. History number 729. First seen May 5, 1914. Diagnosis: epithelioma of inner canthus of right eye. Treated May 6, 1914. with 262 mgms. of radium for 40 minutes. Three treatments in all, the last one June 15, 1914. Second photograph taken July 6, 1914. No return to date.



CASE V.—Patient 55 years of age. History number 810. First seen June 4, 1914. Diagnosis: epithelioma of lower eyelid. Treated June 4, 1914, with ½ gramme of radium for one hour. Two treatments in all, the last one July 9, 1914. Second photograph taken September 19, 1914. No return to date.



CASE VI.—Patient 62 years of age. History number 1667. First seen March 25, 1915. Diagnosis: epithelioma upper right eyelid. Treated May 26, 1915, with 200 mgms. of radium for two hours. Two treatments in all, the last one June 12, 1915. Second photograph taken September 7, 1915. No return to date.

patient cannot look forward to anything but an unsightly deformity with the ever-lurking possibility of a rapid return.

This thought existing always in the mind of the surgeon, another method was sought after, and during the past ten or fifteen years the *x*-ray has been used extensively, with results that have not aroused great enthusiasm. Surgery has thus come to be the method of choice in most of these cases, even when a very radical removal of tissue is called for.

The science of medicine and surgery is constantly on the lookout for a better and safer therapy with which to benefit mankind. During the past seven years my experience has brought me more and more in touch with an advanced view-point towards radium therapy, and I have come to the conclusion that basal-celled epitheliomata around the eye are best treated with radium. This opinion is taken from the results of over one hundred cases treated at the Howard A. Kelly Hospital. The treatment and its results are from every standpoint ideal. The technique is simple, does not cause pain, causes no scar or keloid, recurrence is rare (radium will cure 90 per cent of basal-celled epitheliomata about the eye if taken early, for the treatment with radium, as with surgery, the earlier the case is seen the better chance for a cure), there is no loss of time from work, and the trouble is usually eradicated in from one to three treatments. One hundred to five hundred milligrammes of radium emanation is used for a period of from ten to thirty minutes, depending on the individual case.

Radium is the greatest adjunct to the cure of cases of this kind that has been introduced into science during the past ten years. This therapy is no longer in its infancy or experimental stage. It has been tried and tested from every scientific standpoint, and the results obtained are so conclusive as to leave no atom of doubt remaining.

The accompanying pictures are a few cases, taken almost at random, of this condition which is so successfully treated with radium.

ABDOMINAL PAIN, TONSILLAR ABSCESS, OVARIAN CYST SIMULATING ASCITES, PLEURAL DRAINAGE, AND AUTO-SEROTHERAPY—A CLINIC AT JEFFERSON MEDICAL COLLEGE HOSPITAL.

BY H. A. HARE, M.D.,
Professor of Therapeutics and Diagnosis.

The first patient I will show you to-day is a woman of fifty-seven years, who comes complaining of pain and discomfort of varying severity in different portions of her abdomen. When questioned by my assistant she was quite sure that most of her pain was in the right upper quadrant, but on both occasions when I have questioned her she has been quite sure that most of it is in the left quadrant at its lower margin, and when asked for further information she describes the pain as occurring at times in all parts of the abdomen, high and low.

The first statement as to pain in the right upper quadrant naturally raised the question as to whether she had gall-stones, and this question has not yet been satisfactorily answered, since in a large stout woman a diagnosis of gall-stones is a difficult one to reach, for the *x*-rays very frequently fail to reveal gall-stones even when the body of the patient is not a heavy one. If the *x*-rays in this case definitely showed gall-stones it would be positive evidence that could not be put aside; but as they fail to show gall-stones it will by no means exclude the probability or possibility of their being present, since these stones are frequently not opaque to these rays.

Another point which is rather in favor of gall-stones is that when she has her pain

it is at times referred backward toward the right shoulder-blade, but patients of this type are so inaccurate in describing the locality of their pains and are so apt to be directed by leading questions that I doubt if this statement possesses much value.

The case is to be investigated still further to determine whether there is a gastric or duodenal ulcer; whether there is a floating kidney; whether there is a cholecystitis or chronic appendicitis; or whether there is a condition of enteroptosis which is responsible for intestinal indigestion and flatulence with its characteristic discomfort and attacks of pain. As the abdomen is rather flaccid there is no difficulty in palpating in the appendicular region, and I find there is no evidence of an enlarged or thickened appendix in this area. There is no sign of a tumor in the region of the sigmoid. An examination of the stomach contents fails to reveal the characteristics of gastric ulcer, and she presents none of the typical symptoms of this disease; she does not present any of the characteristic symptoms of duodenal ulcer over and above discomfort, and has no occult blood in her stools. There is no tenderness on palpation in the neighborhood of the gall-bladder. When she is made to stand up, however, and the examiner stands behind her with his hands placed upon the hypogastrium so that he can lift the abdominal contents from the lower half of the abdomen into the upper half, she at once volunteers the information that she is given a sense of comfort by that support, and the examiner is conscious of the fact that he is holding in position a considerable weight of abdominal contents. The diagnosis of the case, therefore, is one of enteroptosis which has occurred through the relaxation of the abdominal wall in child-bearing and by the absorption of abdominal fat, and we will give her temporary relief by applying two-inch zinc oxide strips running from a little beyond the middle line on each side upwards in such a way that the posterior end of the first strip reaches to the spinal column at the level of the upper pole of the kidney and the highest strip will reach as high as the level of the diaphragm at the spinal column. The strips as you see are put on alternately, first one side and then the other, and overlap each other about half an inch. Three or four strips on each side are usually sufficient.

In addition attention must be paid to the condition of the bowels, which should be moved by means of laxatives, if need be, rather than by purgatives, and the use of salol or some other substance which will act as a so-called intestinal antiseptic.

The second patient is a young woman of twenty-five who came into the hospital on the third day of her illness suffering from great pain in her throat or pharynx, finding it difficult to speak and to swallow. It was found that she had a deep-seated sharp infection of her left tonsil, and during the first three days she was in the house she ran a temperature which in the morning was normal but which at night reached from 105° to 106.5°. You will see by the chart that this makes the characteristic steeple curves of septic infection, and such a chart is always indicative of the presence of pus. In other words, in her case it indicated a development of a tonsillar or peritonsillar abscess. I directed that one of the specialists in diseases of the throat should be asked to see her with the object of lancing it. Before his visit, however, the abscess discharged itself into her throat and she spat out a considerable amount of pus. Immediately after this discharge her morning and evening temperature fell to normal, and it has remained there, as you perceive, for a number of days.

These cases should not be allowed to go on to the stage of rupture, since there is danger of the rupture taking place into the tissues of the neck rather than into the throat, or of the rupture taking place into the pharynx while the patient is asleep. Again there is no reason why the patient should be subjected to hours of pain and suffering when she can be relieved as soon as pus has formed.

Do not forget, in lancing such an abscess, to run your knife through a cork so that the end of the knife projects only a short distance, thereby avoiding the danger, through some movement on the part of the patient, of plunging the knife into tissues beyond the abscess. The shoulder formed by the cork prevents such an accident.

Severe tonsillitis often produces systemic symptoms of very marked gravity. Indeed, there are few illnesses in which the patient may seem more wretchedly ill both as to general malaise and sharp symptoms.

In the very early stages of tonsillar infection, 1/500th of a grain of biniodide of mercury taken internally every hour or two for four or five doses will often exercise an abortive influence. After the tonsillitis is once established the old-fashioned tincture of chloride of iron in 20-minim doses three or four times a day, well diluted, still holds its own as being the best internal remedy, the more so as acute tonsillitis often produces a severe grade of secondary anemia. An ice-bag placed externally over the tonsillar area often relieves pain.

The third case that I wish to show you is designed to illustrate the difference in the appearance of the abdomen when it contains free fluid, the patient suffering from ascites, in distinction from when the abdomen is distended by reason of fluid in a cyst. In a patient with ascites the abdomen is fairly flat and bulges in the flanks. Changing the position of the patient from one side to the other results in greater flatness on one side and more resonance on the upper side. This does not take place when the fluid is confined in a cyst. Usually there is a little more prominence on one side of the abdomen than the other in cyst cases. The skin is more tense and glossy, and the belly feels more solid to the hand. The ordinary thrill transmitted from one side of the abdomen to the other on percussion may be absent. It is important that you should remember the possibility of a distended abdomen being due to a cyst, since if you tap, with a trocar and cannula, a papillomatous cyst, you may relieve the discomfort which is due to pressure, but you will greatly shorten the patient's life, since the malignant growth develops far more rapidly than before and toxic absorption also seems to occur.

The next patient is brought before you because he illustrates the wrong place to drain the right pleural cavity of fluid. As the surgeon in some other city has made an incision between the fourth and fifth ribs in the mammary line the presumption is that he expected to obtain pus, for, if he thought it was serum, he would have used the hollow needle. The patient does not know the character of the fluid that escaped. The point that I wish to impress upon you is that, for practical purposes, the level of the diaphragm is at the fifth rib anteriorly, the seventh laterally, and the tenth posteriorly, and, therefore, a needle or a knife introduced in the mammary line does not drain the pleural cavity from its lowest point, but from its highest, and hence unless the patient is partly inverted the fluid is never emptied. Some have advocated puncture, or incision, just above the diaphragm posteriorly, sufficiently far out from the spinal column to reach the pleural cavity. This is more justifiable when the knife is used than when the hollow needle is employed, because when the hollow needle is employed it may go in so far in search of fluid that it will puncture the diaphragm and enter the subdiaphragmatic area, thereby carrying infection into the body of the liver. If, however, you introduce the needle into the sixth or seventh interspace in the posterior axillary line you are in low enough to get drainage, particularly if you deflect the inner point of the needle downward after entering, and there is no danger of wounding the liver; or, if an incision is made and a drainage tube introduced, the drainage tube can be long enough to reach the dependent portion of the pleural space. This case, therefore, tells you where you ought not to go in, and I tell you where you ought to go in, for pleural effusion.

The last patient is a man who has a very large left-sided pleural effusion which has displaced the apex of his heart to the right of the sternum. It does not cause much dyspnea except when he attempts to move about; but this dyspnea is urgent enough to demand relief. The effusion came on insidiously without any previous history of pleurisy or pneumonia. Such effusions are usually tuberculous in origin, and it is not to be forgotten that nature may in some of these cases produce an effusion with the object of placing the infected lung at rest, just as the physician does this by artificial pneumothorax. In other words, in tuberculous effusion it is a question as to whether the patient should be freely tapped, and when dyspnea is urgent whether only sufficient fluid should be withdrawn to give relief from pressure on other parts. You can readily understand that if the lung has been placed at rest in the apex of the chest and contains tuberculous lesions any attempt which it may make too rapidly to expand as fluid is withdrawn may result in pneumothorax, and this in turn is almost certain to become a pyopneumothorax. In this case, therefore, I am going to draw off only a few Cc. of fluid, and I am also going on the principle that possibly this effusion is not tuberculous in origin, but is inflammatory. I am, therefore, going to carry out what is known as auto-serotherapy, which consists in withdrawing the needle still attached to the syringe until its point is in the tissues of the chest, then deflecting it and injecting into these tissues one or two Cc. of the serum. This sometimes results in the absorption of the remaining fluid gradually, which is obviously better than if all the fluid is withdrawn at once. Those who do not believe that auto-serotherapy possesses any advantage, nevertheless have to admit that sometimes the withdrawing of a small amount of fluid and the relief of intrathoracic pressure results in immediately starting absorption and emptying of the pleural space, whereas absorption from such a space when the tissues are so distended that the lymph spaces were occluded is impossible or greatly delayed.

THE INDICATIONS FOR AND THE SURGICAL TREATMENT OF PERIGASTRITIS.

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The general impression derived from reading the literature of perigastritis is that the treatment of the adhesions in question is a simple matter. All writers are in accord on one point, namely, that when the adhesions have produced a pyloric or mid-gastric stenosis the patient should be turned over to the surgeon.

Other than these two complications some physicians maintain that the treatment should be limited to treating the causal subjacent ulcer by medical measures, while others believe that surgery alone can properly deal with the pathological situation. But I am inclined to suspect that the majority of those who have studied this subject consider that the logical line to follow is that when medical measures fail —and this is the usual outcome—the case becomes a surgical one.

Such dissimilar opinions, all based on observed facts, must explain the dissimilarity of the data obtained, and this is clearly the case when the case-reports are gone over.

Treatment can only act in one of two ways, namely, by doing away with the adhesions or by placing the stomach in such a position that it will not drag on the adhesions. It is clear that medical treatment cannot pretend to act directly on the adhesions, but it may, in certain conditions, have a beneficent result by acting on the causal factor of the adhesions and on the gastric motility.

The adhesions are of two kinds. Some

are the result of a florid ulcer, relapsing or not. These are usually soft adhesions, hardly organized. The others undergo their evolution on their own account, the ulcer being in a quiescent state, or they may accompany a chronic ulcer and prepare for its slow extension to the neighboring viscera. In these circumstances the adhesions develop in the form of bands, or they may be extensive, fibrous, and tough, forming two partial or total symphyses.

The first type of perigastritis is always medical, the second usually belonging to the domain of surgery. This simple rule is based upon both clinical and anatomic data, but unfortunately it is inapplicable in the present state of our knowledge because it is an impossibility to determine the structure of the adhesions when physical signs are absent.

Consequently, medical treatment should be the first phase of the therapeutics of perigastritis. It has two objects in view, namely, to favor cicatrization of the ulcer and to place the stomach at rest. The treatment of gastric ulcer is too well known to require comment here, but in perigastritis what is above all to be attained is to place the stomach in as perfect rest as possible. Cessation of feeding by mouth—which may sometimes be essential—is indicated only infrequently in those instances where the slightest ingestion of food gives rise to intolerable paroxysms of pain. Usually a milk diet, given in small repeated amounts, is enough to place the stomach in a state of relative rest and, therefore, to attain the desired end.

Pain being the principal symptom of perigastritis, it is of import not to conceal it by the use of narcotic medication. If diet is not enough to control the pain, before resorting to the preparations of opium it is proper to essay the application of ice over the epigastric region. The application of an ice-bag has the double advantage of calming the painful phenomena and keeping the patient quiet. It should also be applied when an inflammatory induration is detected in the epigastrium accompanied by a rise of temperature.

When strictly carried out, medical treatment may cause a retrogression of the symptoms and will be sufficient to cure a perigastritis when this is due to an acute ulcer. But there is an all-important point which the physician should ever keep in mind, and that is not to be overconfident in the measures employed. If rest in bed, milk diet, and the local application of ice are used without *rapidly* giving results, the patient should be turned over to the surgeon before emaciation has reached such a degree that it makes the slightest intervention dangerous.

To obtain proper results from the operation the surgeon requires time to accomplish his work thoroughly, and this can only be done when the resistance of the patient is sufficient. Only too often the case comes up when the patient is thin and cachectic from long starving, and the surgical risk is so poor that a surgeon having the patient's interest at heart will be more than inclined to refuse any interference. Therefore, if surgery be resorted to it must be at an early date, and the principal operative indication in perigastritis should be drawn from failure of medical treatment.

If those cases in which the clinical diagnosis, completed by radioscopy, has distinctly demonstrated the existence of an adhesive perigastritis be left aside, there are numerous other instances having a limited symptomatology in which only two symptoms—pain and vomiting—have, on account of their resistance to medical treatment, imposed the diagnosis of perigastritis, unless they have been attributed to a neuropathic condition of the patient.

The latter error is very harmful because it prevents surgical treatment from being called upon. It is also an easy mistake to make, but I would point out that when there are prolonged and violent pains in the epigastric region, the physician may be assured that they always have an anatomical substratum. That neuropathic gastric conditions do in reality exist is beyond

question, but it must be admitted that perigastric adhesions are often the causal factor of paroxysmal pain.

In these circumstances an exploratory laparotomy is indicated, opinions to the contrary notwithstanding. As abdominal section is done to-day the risk is small, and it offers itself as the only means of exactly making the diagnosis and treating the lesions, which are frequently minute.

The diagnosis of perigastritis and the failure of medical treatment still imposes surgical measures, because the adhesions are, in many cases, the index of a slow perforation of the ulcer taking place, and it is incumbent upon the medical man to avoid the serious consequences of this dire morbid process. Therefore, the persistent functional disturbances are not the only reasons for surgical treatment.

Distinct data obtained sometimes, such as the presence of a tumor, or an area of doughiness over the gastric area obtained by palpation, are quite enough to justify the surgical interference when inflammatory phenomena are absent.

Subacute inflammation of the perigastric peritoneum is, in fact, a momentary contra-indication, and its treatment should be conducted along the lines already discussed. This inflammation will undergo its evolution in one of two ways, namely, either toward suppuration or toward organization of the adhesions, or, occasionally, by total disappearance of the morbid phenomena.

In the first instance the indication will, of course, be to give exit to the pus; in the second operation is indicated when the disturbances persist, but in both it is better practice to delay operation until a full idea of the morbid condition may be formed. In other words, for a surgical operation to relieve perigastritis, it will be enough that the lesion be serious and chronic with a perspective of approaching emaciation and severe suffering compromising the patient's resistance.

Let me repeat that a diagnosis of perigastritis does not of necessity mean operation. In not a few instances medical treatment will be quite enough to put a check upon the extension formation, and although it may not be able to cause the adhesions to disappear, it will at least silence their symptomatology.

Perigastritis presents during its evolution acute, or more frequently subacute, episodes, but I repeat, when there is a rise of temperature, epigastric hyperemia or edema, deep-seated diffuse thickening or cutaneous hyperesthesia over the epigastrium, operative interference should be delayed. In these circumstances it is better to wait, keeping the patient under close observation.

Two eventualities may then arise: either the inflammatory process will continue to progress, the pus will collect, and the indication for operation will be clear. Or the inflammatory phenomena will subside and the postponed operation may then be proceeded with without any risk of disseminating an infection whose general reactions led the observer to suspect the virulence. But let me again say that so soon as the general phenomena have subsided, the operation must not be further delayed.

These two points, viz., the necessity of medical treatment and abstention from surgical interference during the inflammatory outbursts, being admitted, I shall now attempt to outline what in my opinion should be the surgical conduct to be followed in perigastritis having a gastric ulcer as its causal factor.

This must be based on the results obtained from clinical examination. The patient may offer two classes of symptoms, the one functional, the other physical, but let it be said that the two classes of symptoms are not necessarily associated in the same case. When the functional signs predominate, whether pain be present or not on palpation, the diagnosis will be made by a detailed study of the characters of the symptoms and the evolution of the process.

The symptoms may, perchance, give some clue to the anatomic state of the adhesions, but too much reliance must not be placed

on them because they are far more apt to lead one astray. We may foresee that the perigastritis will cause bands or loose adhesions, but we also know that gastropancreatic adhesions may give rise to no special sign on palpation.

As to the diagnosis of the site of the adhesions, it is difficult to make and more often it is out of the question. The fixity noted during several successive examinations of an area painful on palpation may allow one to assume these adhesions exist at this point. The careful study of recrudescence of pain when the patient makes certain movements or assumes certain positions may be of some help, but on the whole it is a sign which is not reliable.

Radioscopy is the only diagnostic method which will reveal the fixity of a portion of the gastric outline and thus offer some indications, but as yet it has not given the results that were expected of it.

Before operating it would be well for the surgeon to have a very clear idea of the condition of the ulcer subjacent to the perigastritis, but here also only hypotheses can be offered. Recent hematemesis or blood in the feces would indicate a florid ulcer, but the absence of blood means nothing. The fluoroscope by revealing the presence of a depression in the gastric walls indicates a callous ulcer undergoing its evolution, but diverticular shadows are only distinct when the ulcer has extended into the neighboring viscera, and in these circumstances the perigastritis will surely be fibrous and tough.

When distinct physical signs become superadded to the functional signs, the diagnosis becomes somewhat simplified, the location of the lesions is easier to determine, and the extent and consistency of the adhesions will indicate that their separation may endanger the integrity of the stomach because they are not uncommonly the result of a penetrating ulcer. Therefore, the surgeon will have to deal with one of three conditions: a perigastritis the result of an ulcer no longer active; a perigastritis around an active ulcer; and lastly, a perigastritis with tumor.

In all these the clinical diagnosis will be completed and confirmed by laparotomy, which consequently should be of an exploratory nature, and there often are surprises in store for the operator.

A long incision is essential in order to expose the stomach freely, and should be made in the midline from the tip of the sternum to the umbilicus. If this does not give enough room a perpendicular incision can be made at the middle of the first incision and to the left, which will expose the great tuberosity, while one made on the right will expose the pylorus. Never hesitate to divide the recti muscles because if they are carefully sutured at the end of the operation the resulting cicatrix will be perfectly sound and the muscle in no way weakened.

Sometimes perfect gastric mobility will be found, therefore nothing is to be done and the abdominal incision is closed. Such cases have been recorded. If a band of adhesion is found it should be excised between two ligatures and the stumps inverted or buried when possible.

If the adhesions are lax they must be peeled off with the finger or gauze sponge. This must be done slowly and with care in order to avoid tearing the viscera or blood-vessels, especially the hepatic pedicle, when working in the pyloric area. When the stomach has been freed the denuded gastric surface must be carefully inspected in order to discover traces of the causal ulcer. The cicatrix may leave a white, milky patch on the peritoneal surface, but palpation is not to be relied upon too much because the cicatrix is supple and offers no depression; therefore the trace of a former ulcer may be overlooked.

On the other hand, an ulcer in evolution will present its fundus on the serosa and can be easily palpated because of its indurated edges and base.

In the first case the perigastritis represents the only lesion to be dealt with, but in the second it is the ulcer that must be attended to.

When the stomach has been freed and placed in its normal position and hemostasis

having been carefully attended to—and this is a most important technical point—at least one if not both denuded surfaces must be peritonized, and in most cases the gastric surface is the one which lends itself the most readily to this.

Since perigastritis is not uncommonly accompanied by gastrectasis, it will also be possible to bury the raw surface in a fold of the gastric wall, the fold being made parallel with the stomach in order to avoid causing any deformity of the organ.

If the stomach is not dilated or is retracted, the denuded surface may be covered over with a bit of lesser omentum held in place by a few catgut sutures. Or the free border of the greater omentum can be sutured to the lesser should it be more advantageous in the given case. But I feel that this should be avoided and only used as a makeshift, because immobility of the greater omentum is not without disadvantages.

After the operation peristalsis should be stimulated by the exhibition of eserine, pituitrin, or atropine. Some have maintained that these drugs were both dangerous and unreliable. I have never found this to be the case.

Although not a partisan of early getting out of bed after abdominal operations, I do believe that allowing the patients to be up in a few days when there is no contraindication distinctly prevents the formation of new adhesions.

When the ulcer is about to perforate, or when it is of the callous variety, gastrolysis is no longer sufficient and free excision is the only rational way of dealing with this morbid process. The opening in the gastric wall is then closed in three layers and in the direction the least likely to interfere with the lumen.

When the exploratory incision reveals thick, tough, hard and more or less extensive adhesions, gastrolysis has not much chance of success, but it still should be the first step in the operation whenever it is feasible. It may be very difficult to carry out and exposes the neighboring viscera to serious injury, because it must be done with knife or scissors.

Whatever may be the aspect of the area after the adhesions have been separated, the next thing to do is to get rid of the ulcer. Its excision may be attempted, but there is considerable risk in that the structures surrounding it are so morbidly changed that the sutures will probably cut through. The lesions may be so extensive at the periphery of the ulcer that to excise all would leave such a large opening in the stomach that in its closure the organ would be greatly deformed, and its functions would be seriously interfered with. It is, therefore, better to resort to annular resection of the diseased portion.

Pylorectomy and gastrectomy are unquestionably serious operations, but incomparably more satisfactory than simple excision of the ulcer in these circumstances. Continuity will be established by either end-to-end anastomosis or by anterior or posterior gastroenterostomy, according to the circumstances, after closure of both ends.

Occasionally the perigastritis may be only partial; still gastrolysis will be impossible to accomplish, and all that one can do is to put the parts at rest by means of exclusion. Therefore, according to the location of the adhesions, an anterior or posterior gastroenterostomy will be done.

This operation has only given satisfactory results when a pyloric stenosis was present. Now it is known that a stenosis may only be functional in character, so that in these circumstances the pyloric patency will return with considerable rapidity as soon as the stomach has been put at rest. The anastomosis opening will soon cease to functionate and a recurrence of all the symptoms will not be long in appearing. For this reason the gastroenterostomy should be completed by exclusion of the pylorus whenever this is feasible.

Finally, there are cases in which gastrolysis is not only impossible on account of the toughness of the adhesions, but also on account of their extent. In this case the only procedure which will place the

stomach at rest and permit the patient to take food is jejunostomy, which I believe should be done by von Eiselsberg's technique.

In the case of lax adhesions, they may be located in front of or behind the stomach. Gastrolysis will be easy to do when they are located anteriorly, but when they are on the posterior aspect of the stomach they must be reached through the transverse mesocolon or else by way of the lesser omentum.

A posterior perigastritis often does not give rise to any symptoms and interferes little with the motility of the stomach, so that gastrolysis will be more than sufficient in cases in which the clinical signs have necessitated an interference, all the more so because peritonization is difficult to carry out and the lesser mobility of the posterior gastric wall will almost certainly expose the patient to a recurrence. For these reasons the subjacent ulcer must be reached and excised.

Tight adhesions are more interesting. Usually a perigastritis will bind the lesser curvature to the liver and less frequently to the gall-bladder. In about 33 per cent of the cases the posterior gastric wall will be bound to the pancreas, and in about the same percentage of cases the stomach will be found adherent to the anterior abdominal parietes. Lastly, in some infrequent cases the stomach was found adherent to the transverse colon, duodenum, or the small intestine.

I shall now consider perigastritis of the lesser curvature and that of the anterior and posterior gastric surfaces. However, a distinction should be made between adhesions of the great tuberosity of the stomach, pericardiac adhesions, and pyloric adhesions. Peripyloric adhesions are much more frequent.

On account of the anatomical relationship of the upper border and posterior aspect of the pylorus and pyloric antrum, it appears contraindicated to attempt separation of the adhesions when they are thick and plentiful, and posterior gastroenterostomy, with or without exclusion, seems to me the safer operation, and if necessary at a later date the pyloric lesions can be dealt with after the perigastritis has disappeared.

Adhesions about the cardia are fortunately rare, and in the few cases recorded they were located on the anterior aspect of the stomach. On account of the depth at which they are seated their excision is made impossible, but gastrolysis can be carried out. If the lesion is limited in extent and excision possible it may be accomplished with greater ease by making a median one completely dividing the rectus muscle. When the lesion is extensive a gastrostomy, or better still a jejunostomy, should be done.

Adhesions located at the middle anterior or posterior aspect of the stomach create special operative indications. Callous anterior adhesions unite the stomach intimately with the anterior abdominal parietes, and when not too extensive should be excised *en bloc*. If not, after freeing the stomach, the ulcer should be excised as well as the diseased parietal peritoneum.

Adhesions binding the lesser curvature to the liver should be divided cautiously and the operation completed by an excision of the ulcer or annular gastrectomy, according to the extent of the lesions.

Very rarely the adhesions unite the stomach to the colon. When they are lax gastrolysis will be enough, but when they are very tight the transverse colon must first be dealt with, after which a gastrectomy is done.

EDITORIAL.

THE INTRAVENOUS INJECTION OF BLOOD SERUM IN THE TREATMENT OF INFLUENZA.

The administration of drugs having proved to be eminently disappointing in the treatment of influenza of the epidemic type, and the use of vaccines during the attack having proved to be more harmful than beneficial, it is but natural that the profession should turn to radical measures in the hope of saving a certain proportion of individuals who are stricken by this grave disease, the more so since at this time we have a right to expect, from previous experience, local outbreaks of the malady which swept the world some months ago, and which will, if history repeats itself, be less virulent in the majority, but nevertheless death-dealing in a considerable number of patients. The great number of persons who were stricken during the recent epidemic prevented the carrying out of as many careful observations by scientific methods as was desirable, with the result that we have been left with a wealth of personal experience and a sad lack of observations which rest upon incontrovertible fact.

As the weeks and months pass by and more complete reports are made of the various kinds of treatment instituted, it is becoming evident that the use of blood serum, or citrated blood, obtained from patients who have very recently suffered from influenza produces a mortality rate much below that obtained by other methods. Widely different results have, however, been obtained by various observers; some of the difference being explained by the fact that the infection has been of a different virulency in each group of cases. In other instances there has been, without doubt, a mixed infection, and the blood of a convalescent who has suffered from a mixed infection in which one particular organism has been dominant may readily fail to do good when injected into another patient in whom another organism is the predominant factor. Much depends, too, upon the time at which the injection is made. Manifestly better results will accrue in those to whom it is given early than in those to whom it is given when all hope of doing good by other measures has failed.

The literature which is accumulating on this subject is too large to be quoted in its entirety, but one or more papers which offer distinct encouragement may be cited. One of these has been contributed to *La Presse Médicale* by Brodin and St. Girons, who quote a large amount of French literature dealing with the intravenous injection of blood serum and peptones and their effects upon the body. The quantity of blood serum which these clinicians employed averaged 100 Cc. Sometimes only 50 Cc. were used, and occasionally 250 Cc. The injections were always given with great slowness and gentleness. They employed three types of serum—the serum from convalescents, the serum derived from a healthy subject, and serum derived from the patient himself.

They state that they have given of the convalescent serum twenty-four injections to fourteen patients. A few minutes after the injection the patient is prone to suffer from a severe chill and the temperature may be elevated two or three degrees, the pulse becomes quickened, and the blood-pressure falls. After twenty to forty minutes the chill disappears and a sweat follows. With this the temperature falls and the patient expresses himself as feeling better. This reaction is, of course, in no way peculiar to the use of a convalescent serum, but is characteristic of the injection of any foreign protein into the blood. The subsequent result of such a treatment is usually a progressive fall of temperature to normal by lysis, but occasionally it falls by crisis, which may be followed by a brief secondary rise.

Using normal serum they found that the effects were practically identical with those of convalescent serum, which is an interesting observation if it is proved correct by other observers.

In regard to the use of serum derived from the individual patient, they found that

the symptoms as a rule were more severe, but the temperature dropped more sharply to normal.

These serums were employed in cases which had definite pulmonary complications. In one there was hepatization of the right base and congestion of the left base. In two others there was bilateral hepatization, and in still another there was consolidation of the right base.

As sequences of this treatment the patients sometimes developed urticaria, but otherwise do not seem to have suffered any severe result.

It is interesting in this connection to make a note of the experiences of medical officers in the United States Navy who have employed convalescent serum. Thus Bass and Ervin treated fifty-five cases of influenzal pneumonia with a serum derived from patients convalescing from influenza or from influenza complicated by pneumonia. The cases were not picked, but were taken in sequence, and in no case was the treatment withheld because the patient seemed hopelessly ill. This, they think, accounts for the high mortality rate in their series, for many of their patients were of the fulminating type, characterized by early cyanosis, cardiac embarrassment, and pulmonary edema. If these seemingly hopeless cases had been eliminated they think their statistics would have been admirable. Seven of their patients treated with whole citrated blood presented five deaths and two recoveries, but they believe this to be due to the impotency of the serum which they employed rather than to the employment of the whole blood. The rest of their cases received serum from patients convalescing from influenzal pneumonia and presented a mortality of 27 per cent. Ten of those who recovered ended their illness by crisis, which closely resembled that seen in ordinary lobar pneumonia, followed by a brief secondary rise. The illness in the others ended by lysis. The use of the serum did not cause any material increase in the leucocyte count. The quantity they employed varied from 80 to 300 Cc., but the average dose, like that of the French observers, was 100 Cc., repeated in twenty-four hours if need be.

Bass and Ervin are firmly convinced of the fact that there is a decided difference in the potency of different blood sera, and one particular donor whose serum seemed to present peculiar power was kept in reserve and his serum employed successfully when others failed.

Some of their patients developed chills half an hour after the injection, but no fatalities occurred.

At first the bloods were tested for agglutination, but later this was abandoned; but all donors were subjected to the Wassermann test.

Bass and Ervin therefore conclude that, in spite of the high mortality rate, they can be satisfied, beyond the shadow of a doubt, that the use of serum from convalescent influenza-pneumonia patients is of marked benefit in the treatment of influenzal pneumonia, and that the sooner the treatment is begun the better the prognosis. In support of this conclusion they quote the results obtained by O'Malley and Hartman, also of the U. S. Navy, who had a mortality rate of 5 per cent. So, too, the experience of McGuire and Redden of the Navy is also encouraging. These observers treated 151 patients, of whom 6 died, making a mortality rate of 4 per cent. Most of these cases were treated as soon as the pneumonia complications developed, and the average dose was 120 Cc. McGuire and Redden also believe that the serum from convalescent influenzal bronchopneumonia patients greatly reduces the mortality, shortens the course of the disease, and has proved itself almost specific.

In still another report made by a medical officer of the Navy, Hartman, 111 cases were not treated by serum and had a mortality of 25.2 per cent, whereas 46 cases treated with serum from patients convalescent from influenzal pneumonia had a mortality rate of 6.5 per cent.

Manifestly in civil life there is great

difficulty in obtaining convalescent serum, and it is to be hoped that before long some method of obtaining and preparing animal serum, which will be equally efficacious, may be developed.

MIDDLE-EAR DISEASE AND MASTOID TROUBLE.

Practitioners who have been in the profession for more than thirty years will probably recall that in the 70's and 80's earache was a very common condition among children, that great suffering was often experienced, but that mastoid complications were comparatively speaking almost unknown. They occasionally occurred and the results were usually disastrous, but they certainly did not occur with the frequency that has been the case during the last twenty or thirty years. This is shown not only by general experience, but by the records of large hospitals. The first marked increase in mastoid complications seems to have occurred at, or about, the time of the first great epidemic of influenza, and whether this epidemic has resulted in inducing, after many years, a more virulent form of middle-ear infection is difficult to determine because the bacteriology of middle-ear trouble before it took place was crude or non-existent.

An interesting paper dealing with the attitude of the general practitioner or specialist in children's diseases in connection with middle-ear inflammation has been written by Southworth in the *Archives of Pediatrics*. He writes, of course, from the standpoint of the specialist in pediatrics, and first raises the question as to whether some method, or methods, cannot be devised by which middle-ear infections can be prevented, since he does not seem to consider that our methods of treatment of this condition after it has developed are at this time satisfactory. Of course, puncturing the drum greatly relieves pain by providing drainage, and otologists, we believe, universally claim that such drainage tends to prevent mastoid infection; but on the other hand Southworth points out that all too frequently a perfectly simple serous discharge soon becomes purulent even if the operator practices the most scrupulous asepsis, and having become purulent mastoid trouble only too often develops. He raises the question as to whether post-operative douching carries in contamination, and also whether it is utterly impossible for modern medical research to produce a method of preventing a serous otitis media from becoming purulent.

Southworth deplores the fact that the discussion of this subject may give comfort to those extremely conservative people who are opposed to paracentesis, and he also discusses the relationship which exists between the otologist and the pediatrist, since most cases develop in the hands of the latter.

An interesting point which he makes is that 25 cases of acute otitis occurred in his service in an institution averaging 80 infants under fifteen months of age. All of them were studied by the visiting otologist and by himself. They all escaped mastoid operation, although in five of them there was evidence of mastoid involvement and they all got well. This would seem to indicate that the urgency of mastoid operation is not always as great as it has been considered.

While we think that Southworth is correct in his observation, in one sense we cannot help feeling that for the general practitioner to follow him is distinctly dangerous. The proposition is somewhat allied to that of acute appendicitis. A large number of acute cases of appendicitis have gotten well, and some of them permanently well, without surgical interference, but on the other hand we all know how frequent it is to find at operation a gangrenous or perforated appendix, or one about to perforate, although the symptoms have been present only a few hours.

We are inclined to think that the rule in regard to mastoid operation should be very much like that in regard to the operation

for appendicitis, namely, that when symptoms arise which make the diagnosis fairly certain the patient should be subjected to operation, provided the person who is to operate has had sufficient experience to be dexterous and to be prepared to meet complications which may be unexpectedly brought before him. The general practitioner who has not an otologist at hand to do the paracentesis, if he attempts it should do it under the most scrupulous aseptic precautions and then endeavor to get into communication with the specialist, or to place the child under his care, so that at the first moment that mastoid trouble is suspected a course of masterly activity or of masterly precautions can be resorted to.

Southworth is unable to answer the question as to whether it is possible for modern medicine to prevent otitis media and its complications, but he mentions the instillation into the nose of liquid petrolatum, more or less medicated, as being advantageous. He also condemns nasal douching and spraying, but the point that he chiefly advocates is that patients should never blow the nose when the head is in the dorsal position but always when leaning forward, since secretions tend by gravity to collect about the orifices of the Eustachian tubes, and hanging the head forward removes material which might otherwise be forced up into the tube. Furthermore this posture aids in draining the nose. His suggestion, however, that oily drops be placed in the nose in one sense contradicts itself, because it is practically impossible to do this unless the child is recumbent or semirecumbent, and the oily liquid naturally gravitates with secretions to the orifices of the tubes, where we do not believe that its antiseptic power compensates for the increased quantity of fluid which accumulates about these openings.

It would appear that so far as prophylaxis is concerned, particularly in those families where all the children seem to have a tendency to otitis media, tonsils and adenoids should be removed before trouble arises.

When the pain is severe and the drum is bulging, paracentesis should be performed at a point to get the best drainage, but it is not to be forgotten that some of the malignant cases of otitis media and mastoiditis are practically painless. This has been particularly true during the recent epidemic, and we not long ago saw a case in which for various reasons we urged operation upon the otologist, although he was very averse to interference, thinking that the symptoms of mastoiditis were so indistinct as not to justify operation. Nevertheless, to the surprise of every one an acute hemorrhagic mastoiditis was revealed as soon as the operator had gone through the surface of the bone.

Without doubt Southworth is correct in thinking that this problem needs more careful study, and we feel that after otitis media has once begun we have no means at the present time of confining it to the serous type, for like cases of pleural effusion, some seem bound to become malignant or purulent while others remain benign and give little or no trouble.

PROPHYLACTIC VACCINATION AGAINST PNEUMONIA.

Out of all the wretchedness and suffering which has come from the war there has necessarily emerged a certain amount of valuable information which would otherwise have taken many years to accumulate in regard to the treatment of numerous surgical and medical conditions. Not the least of these has been the work that has been devoted to the prevention of pneumonia, which, now that typhoid fever has been conquered, is without question the chief cause of death among troops and civilians.

When we recall that out of 49,000 deaths in the American Army due to disease, not less than 40,000 of these were due to pneumonia, any study which looks toward the prevention of this malady, which is equally fatal amongst civilians, occupies a position of importance equal to that of the struggle against tuberculosis or syphilis.

One of the most interesting and impor-

tant papers of the many that have been published in the last year or eighteen months upon this subject was recently contributed to the *Journal of Experimental Medicine* by Cecil and Vaughan. Most of the experiments that have been made by various investigators have been made with the lipo-vaccine, chiefly for the reason that lipo-vaccine rarely produces disagreeable effects.

Space does not permit us to quote from this study of many hundreds of cases with the detail that we would like, but what our readers chiefly want to know is that the use of a properly prepared pneumococcus lipo-vaccine seems to be without question one of the life-saving discoveries of the decade, provided we can be sure that it is actually sterile. Thus the incidence of pneumonia per 1000 men that received the vaccine was only 7.2 per cent as against 46.4 per cent of those who did not receive the vaccine; 13,460 men, or about 80 per cent of the soldiers under observation, were vaccinated. The dose employed was about 1 Cc., containing 10,000,000,000 each of pneumococcus types 1, 2 and 3. The local and general reactions produced by the vaccine were usually mild, and only 0.7 per cent of those who received the treatment needed hospital care as a result, and none of those were seriously ill.

It is interesting to note in addition that the death-rate of 155 cases of pneumonia of all types that developed amongst vaccinated men one week or more after vaccination was only 12.2 per cent, whereas the death-rate for 327 cases of all types that occurred among unvaccinated groups was 22.3 per cent. The death-rate for primary lobar pneumonia amongst the vaccinated was 11.9 per cent, and among the unvaccinated 31.8 per cent.

Unfortunately it was found that the mortality rate in pneumonia secondary to influenza was about the same for the vaccinated as for the unvaccinated groups.

The chief objects of investigators at the present time are to prepare this vaccine in such a way that it can be rendered positively sterile, its toxicity will be decreased, and that its use can become common amongst the civilian population.

As Cecil and Vaughan point out, vital statistics show that pneumonia kills more people in the United States than any other infectious disease. The rate seems to be increasing slowly every year. Except during the presence of an influenza epidemic the majority of these deaths from pneumonia belong to the primary lobar type, against which this lipo-vaccine has proved to be so efficacious.

CANCER OF THE LARYNX.

It is well within the memory of those of established surgical practice that cancer of the larynx was regarded as a neoplasm which because of its position involved a risk so great as scarcely to justify its removal. The cause of death was attributable neither to hemorrhage nor to the shock of the operation, but was as a rule incident to septic infiltration of the cellular tissues of the neck, or to a complicating pneumonia. With the gradual improvement in technique the mortality of the operation has been steadily lowered. In the intrinsic cases routine operation through a laryngofissure involves a risk no greater than that inherent to other major operations,

St. Clair Thomson (*Journal of Laryngology, Rhinology and Otology*, May, 1919) quotes Semon to the effect that of 212 cases seen in twenty-eight years of extensive practice, 136 were intrinsic, while Chevalier Jackson demonstrates that the more hopeful form—*i.e.*, the intrinsic—is more frequent in the proportion of 98 to 43. Schemiegelow in 66 cases of intralaryngeal cancer found the disease limited to the vocal cords in 36.

The comparative rarity of the operation Thomas believes is due to the circumstance that an early diagnosis, whilst the case is still operable, is not made, patients neglecting a persistent hoarseness until the in-

filtration is beyond reach. Thomson has operated on 38 cases, 22 of whom are alive and well, without recurrence, at periods varying from six months to ten years from the operation. Seven cases survived the operation and died from other causes at periods varying from ten months to ten years. Local recurrence took place in only five out of the 38 cases. Two died from recurrence of the disease in the glands, but without laryngeal recurrence. In one instance this occurred 7½ years after the laryngofissure. In the other it took place within seven months. There are but two cases living with recurrence. In one this was in the glands of the neck, which were removed. The patient is now well, three years and two months after his first operation.

Of the 38 cases varying in age from forty to seventy-five years, no patient has died from any cause directly attributable to the operation. Of a total of 166 operated cases, 78 obtained a cure for over three years. These results compare favorably with those obtained from cancer of internal organs. The advance is striking when it is borne in mind that within comparatively recent times the surgical treatment of the disease was regarded as almost hopeless. The first year after operation is an anxious one as regards recurrence. Tilley reports a case in which one cord was removed, and that side of the larynx remained free for no less than thirteen years, when an epithelioma appeared on the opposite or intact cord.

In none of Thomson's 38 cases was the mistake made of performing a laryngofissure for cancer and then finding the disease to be of another character. One experience with local anesthesia was enough for both Thomson and his patient. He usually used chloroform alone, in some cases combined with ether, or mixed with oxygen.

Usually preliminary hypodermic injection of morphine and atropine was not given. Most patients were able to swallow within a few hours after operation; many of them sat out of bed and read the newspapers the same evening. It was the exception for the patient not to be sitting up in the chair the next day and eating solid food. Two details added to the operation seem to have helped. One is the preliminary skin infiltration, the other the intratracheal injection of 2½-per-cent solution of cocaine.

One long incision is made over the thyroid notch to the sternum. The tracheotomy tube is inserted and gauze packed on top of it through the divided thyroid cartilage. The tracheotomy tube was usually withdrawn from the neck as soon as the operation was completed and was not replaced. Where bleeding is free or when it occurs the tube is of course indicated. The removal of the thyroid cartilage apparently imparts no added risk to the operation. After operation the patients are placed in bed with a bed-rest, in such a position that they sit almost upright. The same evening many of them are able to drink sterilized water.

If granuloma develops it may require removal. It is prone to disappear. Patients are kept silent the first three weeks after operation. In some cases they are sent to a voice trainer. The voice after operation is always sufficient for ordinary purposes of life. Schoolmasters have been able to continue their profession, and others can make public speeches. By an early resumption of vocal uses Thomson believes that compensatory results may be obtained. He believes now that a week's silence is sufficient. If patients apply early with epithelioma of the vocal cord the death-rate should be *nil*, the restoration of voice satisfactory, and the cure lasting.

KIDNEY FUNCTION IN DISEASE.

In the *Journal of Urology*, Volume III, No. 2, Elwyn gives an excellent résumé of Cushny's exposition of what he terms the modern theory of kidney secretion, which, assuming glomerular infiltration and tubular reabsorption, states that the function of the glomeruli is to filter through the semi-

permeable membrane, Bowman's capsule, a deproteinized plasma. The filtering fluid is the blood with which the kidney is remarkably well supplied, the whole of which passes through the kidneys in about five minutes, and under sufficient pressure to cause filtration. The resultant filtrate contains all the soluble constituents of the blood excepting the colloids, to which Bowman's capsule is not permeable. The filtration through this capsule depends upon the difference in pressure upon the two sides of the membrane, the character of the membrane, the permeability of which may be altered, for instance, incident to an insufficient oxygen supply which increases resistance to permeation, and the nature of the filtering fluid. The colloids of the plasma, in themselves not permeable, exert in proportion to their concentration an osmotic pressure which retards filtration in general. The function of the tubules is to concentrate the fluid received from the capsule so as to preserve the water and certain salts for the body economy. These substances, called by Cushny threshold bodies, are excreted only after they exhibit a certain essential value in the blood, while others which are excreted in proportion to their absolute values in the blood are not absorbed by the tubules, but escape by the ureters. Non-threshold bodies are such as urea, sulphates, and foreign substances. Threshold bodies are such as sodium, potassium, calcium chloride, and dextrose, in about the proportion contained in Locke's fluid, and a minute amount of uric acid. Since non-absorbable substances limit absorption of water by exerting osmotic pressure, the urine can never exceed a certain concentration at which the osmotic resistance is equal to the power of absorption.

From this view-point it is obvious that the kidney is not a secretory gland. It has no secreting nerve fibers and exhibits only the functions of filtration and reabsorption. On this basis the action of diuretics can be explained. Aside from those drugs whose action improves the circulation which dilates the kidney vessels, the most efficient are the xanthin compounds, or non-threshold bodies, and not being reabsorbed in the urinary tubules by their osmotic action they prevent water absorption and thus increase the urinary flow.

The diseased state of the kidney can only have effect on its function in so far as it causes damage to a sufficient number of glomeruli or to a sufficient number of tubules; in the first case impeding filtration, in the second diminishing absorption. Any affection which, though involving part of the kidney, still allows practically complete filtration by the rest of the kidney does not call for any extra mechanism on the part of the body. In acute affections the function of the tubules is never completely abolished and there is always some absorption; in chronic affections the condition of the tubules is nearly always secondary to that of the glomeruli. The primary factor in diseases of the kidney is the function of the glomeruli, the function of filtration. As soon as enough glomeruli have been involved to make filtration difficult, another factor is called upon to increase filtration. This cannot be accomplished by increasing secretion of the tubules, for the tubules do not secrete, nor are any nerves present which could stimulate them to secretion. The only mechanism which the body has at its command is that of increasing the pressure in the filter. This necessarily implies increased pressure of the whole arterial system. Hence we have exhibited in extensive glomerular disease, the compensatory mechanism of hypertension. There is one other element which calls for this compensatory mechanism—*i.e.*, thickening and intimal changes in the small and smallest arterioles of the kidney. Such changes decrease filtration of the glomeruli even though the latter are of themselves healthy, and will therefore call for compensation by means of increased pressure to force sufficient blood through the thickened arteries. This assumption suggests some remodeling of the classification for diagnosis, prognosis, and treatment.

REPORTS ON THERAPEUTIC PROGRESS.

ABSOLUTE REST IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

SCHAEFER in *Colorado Medicine* for July, 1919, states that by the term "rest" he means absolute rest in bed over a considerable time. Our main object in using rest is to keep the lungs as quiet as possible, and this is best done by the absolute relaxation of muscles and mind, which can only be obtained in bed. Sitting in a bed does not give complete relaxation of muscle that occurs lying in bed. It is, of course, a physiological fact that the lungs expand to a diminished extent in bed when one is lying quietly than when in any other position.

It is easy enough to advise rest in treating tuberculosis patients, and the question at once comes up, "How?" So Schaefer briefly describes the plan he has used which has accomplished some very good results. When the patient first comes, regardless of the stage of the case, or the temperature or pulse, he is put to bed and kept there for at least a month or six weeks; if the patient has an elevation of temperature or pulse, the bed treatment is continued until he has had no fever for at least a month, and the pulse has improved in quality. Moderately advanced and far advanced cases are often kept in bed for several months after the temperature is normal, depending on the examination of the chest, and the amount of cough and expectoration. In this plan the patient is allowed to go to the bathroom once a day when the bowels move, at which time the bed is made up. All meals are eaten in bed, and following each meal a period of complete relaxation of half an hour is required; after the noon meal this period is lengthened to two hours, when the patient is not permitted to talk or read, and is encouraged not even to think. At other times light reading and short friendly visits are allowed in moderation.

If after several weeks this routine has not banished the temperature and decreased the cough and expectoration, a more rigorous rest cure is instituted. The patient remains absolutely in bed, not going to the bathroom at all, and getting out of bed only when it is necessary to change it. It is always annoying and very often most difficult for patients to use the bedpan, and in many cases he finds that it requires less effort on the part of the patient to use a commode placed at the side of the bed than the bedpan. If after this treatment the temperature still persists, a "typhoid rest cure" is instituted, the patient not even feeding himself, and in some cases not even allowed to talk or the amount of talking being very strictly limited. In talking, the lungs are often used more than in walking, and it hardly seems logical to put patients to bed to keep their lungs quiet, and then allow them to talk at will. By prohibiting all talking and having the patients use a pad and pencil to make their wants known, he has several times been able to get rid of fever that had resisted all other measures.

In addition to simple rest in bed other means to decrease the expansion of the more affected side are used, such as lying on that side on a small firm pillow, as advocated by Webb, and using a weight, as a brick, on that side. Of course the bed is on a porch which in severe weather can be closed at meal and bath times, or else the bed can be wheeled into an adjoining warm room. If the case is suitable for artificial pneumothorax, and such is indicated, the treatment can be considerably shortened, for by no other method can the lung obtain such complete rest. In extreme cases the extrapleural thoracoplastic operation of Sauerbruck as developed by Stough and Shivers has certainly given some good results in otherwise hopeless cases. It is interesting to note that all operative procedures aim at keeping the lung absolutely quiet.

In beginning the rest treatment it should be carefully explained to the patient with

all the "wherefores and whyfores" and in the great majority of cases they will readily comply. The most common objection is, "But, Doctor, I will get so weak." To which he replies that it will be easy enough to get back their muscle strength when they are well, but that if their lungs are once gone they cannot be replaced. Then some will say that it might do for others but not for their particular temperaments. But temperament should no more rule in tuberculosis than in typhoid or pneumonia. And after they get to bed and find how much more comfortable they really are, it is often surprising how contented and happy they become.

It is most important to continue the bed treatment for some time, for our aim is the formation of dense scar tissue in the lung around the diseased focus, and this is an extremely slow process. One of the best cures that he has seen is that of a young fellow who five years ago showed moist râles over every square inch of his lungs, even after being in a sanatorium in Colorado for over a year, and the thing that put him on his feet was a year of absolute rest in bed; he is now working hard every day and quite well. This is by no means an isolated case.

When Schaefer has spoken of fever or elevation of temperature he has meant any temperature over 98.6° F. with the patient resting in bed and the thermometer kept in the mouth at least five minutes, and in cold weather fifteen minutes.

GASTRIC RESPONSE TO FOODS.

FISHBACK, SMITH, BERGEIM, LIGHTENTHAELER, REHFUSS and HAWK, in the *American Journal of Physiology* for July, 1919, state that the digestion of various forms of beef and beef products in the normal human stomach was studied by the fractional method. Over seventy complete experiments were made on twenty-five different subjects. It was found that all normal stomachs do not respond alike to the entrance of the same food. Some respond very promptly and decidedly to the entrance of food, whereas others respond very slowly and indifferently to the same food. Also one type of normal stomach empties very quickly, whereas a second type evacuates slowly under like dietary conditions. The average results for individuals of the rapid- and slow-emptying types have been tabulated and typical comparisons of different meats or different modes of cooking have been illustrated by curves showing acidities developed and emptying times.

Roast beef appeared to be handled by the stomach with about the same ease whether rare, medium, or well-done, although the rare beef had perhaps a slight advantage in this respect.

Beefsteaks appeared to be just as readily digested if cooked rare as if medium or well-done. Very tough steaks from the cheaper and tougher cuts of meats such as rump and shank showed distinctly more rapid evacuation than sirloin or the best tenderloin steaks, in the same individuals. Roast beef was found to lie between these two classes of steaks in gastric response and evacuation time.

Hamburger steaks were found to leave the stomach in about the same time as an equal weight of roast beef under the same conditions.

Stewed beef was handled by the stomach in practically the same time as roast beef, but with a less rapid development of acidity.

The response to boiled corned beef was similar to that of roast beef or stewed beef. Acid production may, however, be slightly delayed in the case of corned beef.

Dried beef was digested with almost the same ease as ordinary roast beef. There may be a slight delay due to the low moisture content if the meat is eaten dry.

Beef bologna was handled by the stomach in the same length of time as roast beef. Calves' liver required a slightly longer time. Beef tongue was less readily digested than dried beef. Frankfurters left the stomach rather quickly, as did also sweetbreads. Tripe was digested a little less rapidly than roast beef.

For 100 grammes of the beef products

tested an average evacuation time of two hours and thirty-five minutes was obtained on subjects of the rapid-emptying type and of three hours and twenty-five minutes on subjects of the slow-emptying type. Total acidities as high as 184 were obtained on meats. The average total acidity at the height of digestion was in the case of beef products 120. These high acid values regularly shown by normal men necessitate a revision of older ideas of "hyperacidity."

The amino acid nitrogen values (which include ammonia) are moderately high at the beginning of digestion due to the ammonia of the meats, show a secondary rise as digestion proceeds, and fall to a low level at the end of digestion as the soluble products leave the stomach.

Pepsin values attain their highest point toward the end of digestion.

They also made a study of the response of the normal human stomach to various pork products prepared in various ways, using the fractional method of gastric analysis. The average results for evacuation times and acidities developed have been tabulated. Comparative responses of the same individuals to these various products as well as to certain beef products have been charted. For individuals with stomachs of the rapid-emptying type a general average evacuation time for pork products of 2¾ hours was found. Subjects of the slow-emptying type showed a general average of three hours and forty minutes. The average total acidity observed at the height of digestion was 117.

Pork products in general were comparatively slow to leave the stomach, as would be expected from their high fat content. The differences were not as great, however, as some figures in the literature indicate. Thus roast pork was retained appreciably longer than roast beef in most instances. Pork chops required about the same period of gastric digestion as roast pork. Fried ham also required considerably longer to digest than roast beef.

Minced ham showed a slight advantage over boiled ham as to evacuation time. Acidities were also more rapidly developed in the former instance. Roast beef was handled somewhat more quickly than either.

Liver and bacon required about the same period of digestion as roast beef. In certain instances liver and bacon were handled more readily than liver alone. In one case the contrary was found.

Pork sausage was somewhat more easily handled than were pork chops, but less readily than roast beef.

Ham bologna required about the same time to digest as fried ham or as the less readily digestible beefsteaks.

The evacuation of bacon was found to be low and low gastric acidities were developed. Ham sandwiches were more readily handled than most other pork products tested.

"Scrapple" left the stomach more slowly than pork sausage and belongs to the less readily evacuated pork products.

Pigs' feet gave variable results, but appear ordinarily to be handled more easily than pork chops.

The response of the normal human stomach to roast lamb, stewed lamb, lamb chops and sheep brains was studied, using the fractional method of gastric analysis. The results have been tabulated as averages. Comparisons of lamb cooked in different ways as well as comparisons of lamb with pork and beef have been charted.

Lamb was found to require from two to three hours (average 2½ hours) for individuals possessing the rapid-emptying type of stomach to digest, and from 3 to 4 hours (average three hours twenty minutes) for individuals with the slow-emptying type of stomach. Roast lamb and lamb chops required practically the same period of gastric digestion, and stewed lamb a little longer than the other two. Sheep brains left the stomach rather rapidly (2½ hours) and developed a lower acidity than the other meats.

Lamb stimulated acid production fully as much as any other class of meats and apparently to a slightly greater extent than beef or pork. The average total acidity at the height of digestion was 134.

On the average, roast lamb remained in

the stomach a few minutes longer than roast beef, but not as long as roast pork.

Continuing their studies still further they state a series of over 90 experiments on 18 different subjects was carried out to determine the response of the normal human stomach to eggs prepared in various ways. Two eggs were used as the experimental meal except where otherwise specified. The fractional method of gastric analysis was employed. The evacuation times and highest acidities were tabulated and curves plotted to show the comparative responses of certain subjects to different egg preparations.

The subjects were classified as belonging either to the rapid- or to the slow-emptying types. The average evacuation time for all egg preparations was for the first class two hours and 15 minutes and for the second class three hours and five minutes.

Eggs give rise to less stimulation of gastric secretion than meats and leave the stomach sooner. Beef, for example, showed an average emptying time of two hours and 35 minutes for the rapid- and three hours and 25 minutes for the slow-emptying type. The average of the highest acidities developed in egg experiments was 80 as compared with 120 for beef. In general eggs show high combined acidities throughout the early period of digestion.

Raw egg-white left the stomach much more rapidly than any other form of egg preparation. A moderate secretion of gastric juice was induced in subjects of a high acid type, but this did not become apparent until most of the egg-white had left the stomach without being acted upon by the gastric juice. Egg-white with 200 Cc. of distilled water produced a more marked stimulation of acid secretion. Egg-white with 200 Cc. of orange juice led to a distinct gastric secretion and a rapid evacuation of the stomach.

Raw egg-yolk required much longer to leave the stomach than egg-white and higher acidities were developed. Whole raw eggs resemble egg-yolk in their response whether unmixed or strained through cloth, showing the same delayed evacuation and greater acid stimulation as compared with egg-white. Raw eggs produced somewhat less stimulation of acid secretion than boiled eggs and remained longer in the stomach.

Hard-boiled eggs required on the average a few minutes longer for gastric digestion than soft-boiled eggs, but the acid response was similar in the two cases.

Scrambled eggs required a little longer to leave the stomach than boiled eggs. Fried eggs were handled as readily as soft-boiled eggs or any other type of cooked egg. Eggs scrambled or fried with a large excess of fat remained in the stomach a little longer, the difference being most marked with the rapid-emptying type of individual. The belief that fried or moderately greasy foods give the stomach appreciably more trouble than others was not supported by their findings.

The response of the stomach to plain and Spanish omelets was found to be quite similar. Omelets remained in the stomach as long as scrambled eggs and longer than boiled eggs. Poached eggs, shirred eggs and soft-cooked eggs were found to be among the more readily digested forms of eggs.

Eggs pickled in vinegar were digested in the same time as the hard-boiled eggs from which they were prepared. Deviled eggs remain in the stomach a little longer than plain boiled eggs.

The eggs of the duck and turkey are handled by the stomach in the same way as hens' eggs, evacuation being somewhat delayed in the case of turkey eggs, due apparently to their greater bulk.

The Chinese preserved egg called "pidan" gave rise to delayed and low acid responses in the stomach as well as delayed evacuation. This may have been due in part to the unappetizing character of these eggs.

Cold storage eggs, whether boiled or fried, could not be distinguished from fresh eggs as far as the response of the stomach was concerned. The same was true of the mixed frozen eggs of commerce,

whether these were scrambled or used in baking of cakes.

Eggs with milk, or egg-nog, leave the stomach a little more slowly than eggs alone, the egg-albumin preventing the formation of indigestible curds in the stomach such as are likely to be formed with milk alone.

Eggs with bread or French toast remained in the stomach a little longer than bread and butter alone, but not longer than hard-boiled eggs.

Bacon and eggs were taken care of by the stomach almost as readily as fried eggs alone, while possessing distinctly higher food value.

Frizzled beef with scrambled eggs were digested as quickly as scrambled eggs alone. Eggs and meat appear therefore to form a desirable combination from the standpoint of gastric digestion.

EARLY INTRATHECAL INJECTION OF ANTIMENINGOCOCCIC SERUM.

The *British Medical Journal* of July 26, 1919, calls attention to the outbreaks of cerebrospinal fever during the war, especially in depots and camps, which have shown that the meningococcus is more frequently present in the circulating blood than was formerly known, and particularly that a blood infection may precede any demonstrable microbic invasion or inflammation of the meninges. This premeningitic or septicemic stage was recognized in 45 per cent of 265 cases by W. W. Herrick, who put forward a strong plea for the treatment of such cases by intravenous injection of antimeningococcic serum so as to abolish the infection before the meninges became affected. In this way he was able to reduce the mortality from 62.5 to 18.5 per cent, a result contrasting very favorably with the 30.9-per-cent mortality among Flexner's 1294 cases treated with extrathecal injections.

This septicemic stage, however, is not constantly present; most observers do not obtain positive blood cultures in more than 25 per cent, and the meningococci are probably often present for a very short time in the blood, so that there is not a true septicemia. Its existence may be suspected in patients with a petechial eruption, and assumed in the fulminating cases, which practically always have a purpuric eruption and may prove fatal before meningitis has begun. The incidence of the fulminating cases and the frequency of rashes vary in different epidemics, and probably the incidence of meningococcemia varies in a corresponding manner. In France, according to Netter, meningococcemia has become more frequent with the increased prevalence of cases due to the parameningococcus (Gordon's types II and IV). The healthy meninges and choroid plexus resist the passage of meningococci, but from experiments on rabbits Austrian drew the far-reaching deduction that, although meningococci injected intravenously do not cause meningitis, an aseptic meningitis produced by intrathecal injection of the rabbit's serum breaks down the meningeal defense so that meningococcic meningitis may now follow intravenous injection of meningococci. This sequence occurred in three out of twenty rabbits. As intrathecal injection of antimeningococcic serum may set up a chemical meningitis in man, it might appear a fair deduction that its intrathecal injection during the premeningitic stage might do harm by determining meningitis. But apparently the analogy is not without a flaw, for Flexner and Amoss had previously proved that, whereas a chemical meningitis induced by normal serum or other agents promotes poliomyelitic infection, the intrathecal injection of an immune antipoliomyelitic serum which equally sets up a chemical meningitis prevents the onset of poliomyelitis.

In order to throw light on the important problem whether or not an aseptic meningitis enables meningococci in the blood to pass through the meninges and set up meningococcic meningitis, Amoss and Eberson, working at the Rockefeller Institute, have

repeated Austrian's experiments on rabbits and have performed others on monkeys. In neither series were confirmatory results obtained. But they found that if the spinal cord of the rabbit was mechanically injured during the intrathecal injection of serum, meningococci then escaped into the meninges; and they point out that as Austrian's typical protocol mentions that "injury of the cord caused twitchings of the tail and spastic palsy of the left hind leg," a mechanical rather than any chemical injury may reasonably be regarded as responsible for the resulting meningococcic meningitis. They therefore conclude that their experiments do not lend any support to the view that intrathecal injection of antimeningococcic serum early in the course of meningococcic infection in man, and possibly before the meninges are inflamed, favors the passage of meningococci from the blood stream into the subarachnoid space. This obviously has a very important bearing on the treatment of this disease.

SYPHILIS OF THE NERVOUS SYSTEM AND ITS TREATMENT.

MACKENZIE, in the *Glasgow Medical Journal* for July, 1919, states it has been taken for granted that locomotor ataxia is not amenable to antisyphilitic treatment. The more extensive application of the refinements in diagnostic methods in syphilis has proved conclusively that locomotor ataxia is a syphilitic disease. The doubt that had for some time existed as to its invariable association with syphilis was fostered in some degree by the fact that clinical observation had led to the conclusion that in many cases mercury and iodides so far from doing good actually did harm. The employment of salvarsan, however, in this chronic form of nerve syphilis has proved beyond doubt that in a large number of cases suspension of the progress of the disease can be secured, and amelioration of many of its most disturbing symptoms can be accomplished. In estimating the value of specific therapy, certain considerations have to be borne in mind. These considerations are best represented by the following questions:

1. Can the course of the disease be arrested?

2. Can treatment procure an improved accommodation after important structures have been irreparably destroyed?

3. Is treatment followed by amelioration of the symptoms?

1. The symptoms of locomotor ataxia may appear at varying periods from the date of infection. We have seen them commenced as early as the end of the third year and as late as the twentieth year. But no definite conclusion can be based on the variation of such periods, because naturally the time at which the patient becomes cognizant of the disease depends not only on the capacity for observation but also on the individual sensitiveness to a disability. But apart from this variation in the intervals between the origin of infection and the first appearance of symptoms there is a considerable difference in the rate at which the degeneration proceeds. Just as in general paralysis of the insane, so in locomotor ataxia, one may find, on the one hand, a slowly progressive disability in which the ataxia may appear to remain stationary for years; while, on the other hand, the disability may commence with apparent suddenness and run, within one or two years, a rapid course to complete paralysis of the lower limbs. It has been found that a sudden aggravation of the slowly progressive case may cease under the influence of salvarsan treatment, whereas the rapidly progressive cases receive little or no benefit; so that while it is difficult to form a definite conclusion on the question of complete arrest, it would appear that in those cases where the resistance of the body has determined a very chronic course, the adoption of specific therapy may lead to arrest of the progress. On the other hand, while the disease is rapid in its progress, and where especially there is evidence of spreading to cerebral structures in the development of the tabetic form of general paralysis, the administration of drugs is of no avail.

2. The second question which arises is concerned with the problem as to whether the administration of salvarsan, in addition to arresting the course of the disease, can assist in a reëstablishment of an improved accommodation on the part of those nervous structures which remain intact. It is of fundamental importance in estimating the ultimate result of nerve destruction to determine how far the final disability is functional in its character, and how far it actually depends on the destruction of the nerve elements. In locomotor ataxia, even of a mild and circumscribed character, certain nerve elements are irreparably destroyed. The capacity of the patient to respond to his surroundings depends upon his ability as an individual to utilize, by the processes of adaptation, those nerve structures which have escaped the destructive influence of the disease; that is to say, two syphilitic subjects with locomotor ataxia may have suffered an equal loss of nerve structure, but the disability in the one case may be greater than that in the other, owing to the relatively greater incapacity of the former to adapt himself to the demands on locomotor apparatus. This, of course, depends on factors and conditions of which we have no direct knowledge. We speak in a general way of the tone of the body or of the nervous system. Salvarsan cannot replace nerve structures which have been destroyed. Locomotor ataxia is a disease in which the function of the nervous system is not prejudiced by the pressure of exudates which can be absorbed by antisyphilitic remedies. One is thus forced to the conclusion that, in those cases in which improvement occurs, and they are not a few, this improvement is to be ascribed in part to the general tonic effect which the salvarsan has on the body generally, and on the nervous system in particular.

3. Much more easy than the answers to the first two questions is that to the third. The physician may be doubtful of the arrest of the disease; the improvement in adaptation is often not easy to estimate; but where the symptoms are concerned the evidence of the patient is conclusive. There can be no doubt at all that in a large number of cases the most distressing symptoms of locomotor ataxia may find pronounced relief from the administration of salvarsan. In several instances pain and vomiting of a gastric crisis have been seen to yield to treatment. The pains and disturbing abnormalities of sensation have likewise receded or disappeared after injection. As regards the objective evidence of the disease, he has noticed that occasionally pupils which have been fixed to the light reaction have become slightly movable, and knee-jerks which have been lost have returned—sometimes slightly and for a short period, and sometimes for a period of two or three years.

While there can be no question of cure of the disease in the sense in which some of the other manifestations of syphilis disappear, his results of treatment of 62 cases of locomotor ataxia leave no doubt that it should be employed in every case. In some cases treatment will meet with complete failure; in others, it will be accompanied by surprising benefit.

THE ACTION OF DRUGS UPON THE OUTPUT OF ADRENALIN FROM THE ADRENALS.

STEWART and ROGOFF, in the *Journal of Pharmacology and Experimental Therapeutics* for May, 1919, summarize their paper as follows:

1. They begin with a discussion of essential points in the technique of measuring the adrenalin output. It is pointed out that in general it is no more possible to demonstrate (or measure) alterations in the rate of adrenalin output by observations which only take account of changes in the concentration of adrenalin in the blood coming from the adrenals, than it would be to demonstrate (or measure) alterations in the rate of carbon dioxide production in an organ by observations which only took account of the number of volumes of carbon dioxide in 100 Cc. of blood, but paid no attention to the number of cubic centimeters

of blood passing through the organ in a given time. In this connection it is again shown that statements in the literature as to the influence of various conditions in notably augmenting the rate of adrenalin output are vitiated by neglect of this factor.

2. Strychnine causes a marked increase in the output of adrenalin from the adrenals (in the dog and cat). Although it is only by chance that a sample of adrenal blood corresponding to the maximum increase can be collected, outputs ten times the original output have been observed.

3. The increase is not transient but persists for a considerable time. No attempt was made to continue the experiments until it had completely subsided, as it was not thought that any useful purpose could be served by keeping the animals, after the necessary operation, several hours under the anesthetic. The last adrenal sample was usually taken an hour to an hour and a half after the strychnine injection, and it was the rule to find that at this time the epinephrin output was still notably augmented. Indeed, with the smaller doses the effect may go on increasing during the whole experiment, and the last specimen may correspond to a rate of output as great as or greater than that of any previous specimen. Abundant evidence has been produced in other papers that animals under similar experimental conditions, but without strychnine, do not show an increased adrenalin output.

4. No attempt was made to fix a minimum effective dose, but it was clearly shown that doses of strychnine well within the therapeutic range, and which caused little or no exaggeration of reflex excitability, are capable of producing a considerable augmentation in the rate of output. In this connection it must be remembered that the animals were necessarily well anesthetized, and it is to be supposed that still smaller doses would suffice in non-anesthetized animals.

5. Indications were obtained in some experiments that the stage of prolonged augmentation of the rate of output, which constitutes the principal action of the drug, may be preceded by a transient diminution. This phenomenon was best seen with the smaller doses and with subcutaneous administration of the drug, presumably because with the larger doses and with intravenous injection the augmentation of the output comes on so rapidly as to mask any preliminary decrease.

6. The augmentation of the output caused by strychnine is associated with a more or less marked increase in the adrenalin concentration, even when at the same time the rate of blood-flow through the adrenals has been increased, a phenomenon not seen in the absence of the drug. But no evidence has been found that under the influence of strychnine the possible normal maximum concentration in the plasma (something like 1:500,000 as assayed by rabbit segments in adrenal blood from non-strychninized animals) can be increased.

7. The above conclusions are all based on assays of adrenal blood with rabbit intestine and uterus segments. But corroborative evidence of the augmenting influence of strychnine was obtained by studying the effects produced on the blood-pressure by adrenal blood, collected in a cava pocket for a given time before and after strychnine, when the blood was allowed to pass from the pocket into the circulation, and in other ways.

8. In spite of the greatly increased output of adrenalin caused by strychnine, there was no evidence that the adrenalin store of the adrenals is distinctly diminished even by the prolonged action of the drug in large and repeated doses. The accumulation of adrenalin in the glands is therefore increased as well as its liberation. This is what happens during stimulation of the splanchnic except when intermittent stimulation is continued for very long periods. It corroborates other evidence that the strychnine effect is produced by an intensification of the secretory process through the nervous mechanism which normally governs it. There is no direct action on the glands.

BLACKWATER FEVER.

ARTHWRIGHT and LEPPER, in the *Indian Medical Gazette* for July, 1919, in reporting a series of sixteen cases occurring in the Eastern Mediterranean, state in their conclusions:

1. Blackwater fever is due to malaria.

2. It is predisposed to by a long-standing malaria infection with repeated relapses.

3. An attack of blackwater fever is precipitated by a relapse or recurrence of malaria.

4. The ascertained maximum and minimum intervals in different cases in their series between the arrival in a malaria country and the first attack of blackwater fever were maximum ten years, minimum seven months; between the first recognized attack of malaria and the first attack of blackwater fever were maximum ten years, minimum fifty days; between the arrival in a country which was non-malarial and free from anopheles and the first attack of blackwater fever were maximum five months, minimum one month.

5. Quinine in the class of cases with which they have met has no share in producing blackwater fever, nor has quinine treatment during or after the attack any effect in prolonging or reproducing hemoglobinuria.

6. The jaundice of blackwater fever is certainly in some cases due to bile-pigment in the circulation.

7. It is possible to estimate the total amount of blood-pigment in the urine, whether in solution or in the deposit, after converting it into acid hematin (modified Sahli's method). The amount of hemoglobin lost by the kidneys is much greater than would be ascertained by an attempt at direct hemoglobin estimation of the urine. They are convinced however that the kidneys excrete only part—possibly a small part—of the hemoglobin which is lost in an attack of blackwater fever.

8. The treatment which appeared to be of most value was intravenous or rectal administration of physiological salt solution (NaCl 0.9 per cent). Whether quinine is of value or not was difficult to decide, since all their cases had some quinine, and the intensity of the attack was no doubt different in each case. They quote Matko as to the inter-relationship between quinine and urine in hemolysis as follows:

The protective power of urine against a hemolytic action of quinine depends upon its content of acid phosphates (K_2HPO_4, or Na_2HPO_4), which also exert *in vitro* a protective action. In order to prevent hemolysis *in vitro* by 0.04 gm. of bisulphate of quinine, 0.007825 gm. of disodium phosphates, free from water of crystallization, is necessary; the optimum amount is about 0.015 gm. As a result of these observations the author surmised that the onset of blackwater fever is bound up with a disturbance of phosphate metabolism, and decided to treat a case of this disease with disodium phosphate. He injected intravenously a 24-year-old man, sixteen hours after the onset of blackwater, with 200 Cc. of a 2.5-per-cent solution of disodium phosphate. Seven hours later the urine was almost normal. One hour afterward, however, there was a severe relapse; three hours later 200 Cc. of the solution was again injected, and eight hours later the urine was again practically normal. Again, an hour later, a severe relapse occurred, and it was then decided to combine the disodium phosphate with sodium chloride, and at noon 120 Cc. of a 0.6-per-cent solution (containing both salts in equal proportion) was injected. The result was astonishing, the hemolysis ceasing immediately. The urine became clear one hour after the injection, and in four hours the hemoglobinuria had completely disappeared.

The injection of disodium phosphate is followed constantly after about half an hour by a rigor and rise of temperature to from 39° C. to 40.5° C.; by combining the disodium phosphate with sodium chloride, the rigor and rise of temperature is avoided.

The general condition of the patient improved rapidly after the injections, which also had a remarkable effect on the blood. Before injection the red cell count was 3,000,000 and the hemoglobin 40 per cent,

and blood films showed profound changes in the red cells, *e.g.*, marked poikilocytosis, etc. Two hours after the first injection the red cells numbered 5,000,000 and the percentage of hemoglobin was 120; in blood films the red cells stained deeply and were all of normal appearance.

The author concludes that his observations on this case showed that on the one hand the injection of disodium phosphate resulted in the immediate disappearance of the severe blood changes, and the production of a normal red cell picture; and on the other hand that disodium phosphate in combination with sodium chloride brought the hemolysis to a standstill.

THE TREATMENT OF HUMAN BERIBERI WITH AUTOLYZED YEAST EXTRACT.

SALEEBY, in the *Philippine Journal of Science* for January, 1919, just received, gives us a concise summary of his findings when the autolyzed yeast extract was given to human patients:

1. About two score cases were treated; five were children below two years of age; ten were treated in hospital; all others were out-patients.

2. Adults were given from 15 to 40 cubic centimeters three times a day. Children were given from 2 to 4 cubic centimeters every three hours, or six times a day. Bigger doses did not seem to give better results. No sign of poisoning was observed.

3. Only acute and uncomplicated symptoms of beriberi were observed under treatment. Chronic nerve, muscular, or cardiac lesions were actually unaffected.

4. All acute peripheral symptoms of neuritis were affected quickly. Marked results were noted in less than three days, and a week's treatment seemed to give full relief in mild acute cases. Treatment was generally followed up for two weeks at least.

5. Infantile beriberi symptoms were relieved with comparative rapidity. Edema yielded quickly, and nutrition improved at once.

6. No special diet was prescribed. Patients were given regular hospital diets in accordance with the state of their digestion.

7. Children receiving the extract continued to nurse at the mother's breast.

8. The effect of the autolyzed yeast extract used is similar to that produced by the hydrolyzed extract of rice polishings; it seemed weaker, however.

A SIMPLE AND EFFICIENT METHOD OF COATING BLOOD TRANSFUSION TUBES WITH PARAFFIN.

ALTON, in the *Journal of the American Medical Association* of August 16, 1919, states that during the past two years the citrate method of giving blood transfusions has been coming more and more into general use. Many surgeons who formerly employed the paraffin-coated tubes for transfusion have given up this method for the citrated blood.

The principal objection to the use of the paraffin-coated tube is the difficulty of obtaining a thin, even coating of paraffin. Coating tubes with melted paraffin is a long, tedious process, and good results are obtained only in the hands of those who are experienced in the method.

The advantages of the method he describes are simplicity, rapidity, and the assurance of always obtaining a thin, even coating of paraffin.

The sterilized tubes are rinsed with a small amount of alcohol followed by a small amount of ether. About one ounce of a paraffin-ether solution (paraffin 1 part, 53°C. melting point, and 80 parts of ether) is poured into the tube.

The tube is shaken and rolled so that the solution bathes the entire inner surface. A small amount is allowed to pass through the cannula to insure a coating of the walls of its lumen. The remaining solution is quickly emptied through the top of the tube. The ether which remains on the surface quickly evaporates, leaving a thin, even coating of paraffin.

A rubber cork should be used with this method. It is prepared by pouring some paraffin-ether solution over it, and the ether

is allowed to evaporate. The cork and tube are now wrapped in a sterile towel.

He has found that a tube coated by this method gives better results if it is not used for several hours after it has been prepared, as it allows a more complete drying of the paraffin.

The foregoing procedure is carried out under aseptic conditions. The paraffin used in the solution should be sterilized in an autoclave before being mixed with the ether.

He has used this method for the past two years in the British casualty clearing stations in France, and he has found it as satisfactory as paraffin applied by heat.

WEANING.

GRAHAM, in the *Pennsylvania Medical Journal* for August, 1919, states it is not sufficient grounds for weaning a baby if the infant does not gain a certain number of ounces every week, because it vomits occasionally, or has abdominal pain, or the stools are not normal in color or consistency. It is probably true that the breast milk that this child is receiving is not an ideal food, but instead of weaning the baby, one should inquire into the health of the mother. Does she get the proper hours of sleep, the right kind of food, and an abundance of fresh air? Is she worn out by household care and worries or overwork? Regulate her food, sleep, and exercise. Examine carefully as to all the facts connected with the baby's feeding, especially as to frequency, and length of nursing periods. Is it living out-of-doors? Are its sleep, clothing, and bathing properly attended to? In other words, we should approach the subject of weaning from two directions. First of all, we should do all we possibly can to improve the health of the mother; and second, we should put the baby under those conditions that would be best suited to its normal health and development, and would indirectly have a tendency to benefit its digestion. If, after doing all this, the baby still fails to gain in weight, and the amount of breast milk is clearly deficient, a small amount of properly modified milk may be given after each breast feeding. This plan of giving after each breast feeding a sufficient amount of properly modified milk to compensate for the deficiency in the breast milk is applicable to a very large number of breast-feeding infants.

If it is found that at the proper time for nursing the breasts are practically empty, then a properly modified milk mixture may be given to take the place of the nursing. One or more such bottles may be given every day. We must, however, not forget that the nursing of the infant keeps up the secretion of breast milk, and therefore no more breast feeding should be omitted than is absolutely necessary.

It is a common thing to wean a baby because an analysis of the mother's milk shows that it does not conform to the accepted standard of breast milk. This normal standard may vary between very wide limits. Different specimens taken from the same mother may vary, and the milk nursed by an infant may differ from the milk drawn from the same breast with a pump. It is also a fact that there is a difference in the composition of fore, middle, or end of a nursing milk. Then again an analysis of breast milk is expensive. Several analyses of the same milk are often necessary before its average composition is determined.

Graham does not wish to go on record as not believing in the analysis of breast milk, but he enters a protest against weaning a baby simply because the breast milk does not come up to a certain set standard.

He believes that a poor breast milk is often better than a bottle, and it is usually unwise in this case to wean a baby until one has done everything possible to improve the quantity and quality of the breast milk. We of course all appreciate that breast milk contains substances that are very important for the infant and of great protective value. There are occasional cases in which breast milk should not be given, but they are in his opinion and experience very rare indeed.

It is always a safe plan to begin with a

cow's milk mixture which is considerably weaker than what would be given a healthy baby of the same age who had been raised on a bottle. A fair average would be to start the milk formula at about one-half the strength of what would ordinarily be given to a healthy infant that was of the same age as the baby to be weaned. If the child can digest this, the formula can be cautiously increased.

It is wiser as a rule not to wean the baby during the hot summer months. The change from the breast to the bottle during the heated term is very likely to cause gastrointestinal disturbances. This, of course, would not hold true in infants who are taken to a cool climate during the summer months. Always, if possible, wean slowly rather than rapidly. At first give one bottle a day. If this agrees, in the course of three or four days a second bottle feeding may be given. In this way the breast feeding can be gradually discontinued.

A baby should be weaned if the mother has any disease which she may transmit to her nursing infant, such as typhoid fever, or tuberculosis, or if the mother has any disease which the nursing might have a tendency to aggravate, as nephritis, tuberculosis, or acute pneumonia. If the mother becomes pregnant the infant should be weaned, but sudden weaning is not necessary; one or two weeks can usually be taken in the gradual withdrawal of the breast. If the mother is suffering from some comparatively mild disease, but the symptoms from that disease are very severe, it is often safer to discontinue nursing entirely for a few days, and put the child on a weak formula. The breast should be pumped, and after the severe symptoms have disappeared, the child may be returned to the breast. If the illness of the mother is of a slight character, and her symptoms mild, and the disease cannot be transmitted to the nursing baby, the infant may be nursed every other feeding, and a weak cow's milk mixture be given every other feeding. Menstruation may cause temporary gastrointestinal disturbance in the infant, and make it necessary to institute complete or partial weaning for a few days.

POSTINFLUENZAL TUBERCULOSIS.

MURPHY, in the *Boston Medical and Surgical Journal* of August 28, 1919, states in his conclusions that epidemics of influenza are not followed by any measurable increase in the incidence of tuberculosis.

That in people with mild or arrested tuberculosis a higher incidence of influenza is evident than in those with the advanced type.

That in people with active tuberculosis a certain degree of immunity is produced by the constant presence of a low-grade chronic inflammatory process of the respiratory tract, which protects them to some extent against a frank invasion of influenza.

That cases of glandular tuberculosis, especially the cervical and tracheobronchial type of children, show a very high incidence of influenza, but very few frank cases of pulmonary tuberculosis follow.

Individuals in the prime of life, apparently free from physical defects and previous history of illness, are more susceptible to influenza.

TREATMENT OF INFLUENZA BY MEANS OTHER THAN VACCINES AND SERUMS.

HERRICK, in the *Journal of the American Medical Association* of August 16, 1919, states that one of the hardest things to do in the treatment of a serious, self-limited, infectious disease is to refrain from prescribing drugs merely because the diagnosis has been made. The self-restraint of the level-headed physician is likely to be swept aside by the thought of the possible grave consequences of the malady, and his accustomed good judgment is apt to be smothered in the semihysterical atmosphere of alarm that pervades the community during the visitations of the epidemic. He forgets that a large proportion of patients with in-

fluenza do not need a single dose of medicine. There should be no routine treatment according to which certain drugs are given at stated periods, whether or not there is a clear indication for their use. The treatment is really expectant, symptomatic, and individualistic.

It was his lot to be in charge of the influenza isolation wards in the Presbyterian Hospital, Chicago, during the recent epidemic. There were about 160 nurses, members of the hospital personnel, and medical students from Rush Medical College, who were patients. The disease was vicious and severe; pneumonia and other serious manifestations were common. Of the 160 patients, only one died, a nurse. So far as he could learn, there had been no prophylactic vaccination or use of serum in any case; no treatment of this kind was instituted in the hospital. There were no standing orders as to drugs. No acetylsalicylic acid, phenacetine, digitalis, codeine, quinine, atropine, or other remedy was prescribed as a routine. Rest in bed from the very beginning of the symptoms, and for several days after the cessation of the symptoms, was the standing order. Liquids were given freely. He has wondered whether if he had used some vaccine or serum or other supposed specific he might not now be eager to get into print with his record of only 0.6 per cent mortality. Nay, he should have been in print long before this. He has the satisfaction of knowing that no lives were taken by drugs (he thinks he is free of the charge in the one fatal case with extensive pneumonia), and that cautious conservatism gave nature a chance to work a cure. He trusts he helped her in her healing work.

The remedy that seemed of greatest value was digitalis. Without waiting for alarming indications of failing heart to develop in the way of feeble tones, rapid action, arrhythmia, or dilatation, digitalis was given by the mouth, hypodermically, or intravenously, in small or large doses as need arose. He is sure that by its intravenous use several patients were very materially benefited, and that in some instances dangerous or even fatal heart failure was averted. He never saw harm result from its careful use, except that occasionally it induced nausea when given in large or frequent doses, as it necessarily had to be. Next to digitalis, the drug that seemed to him to be most helpful was opium—nearly always given as a hypodermic of morphine, or when the allaying of an annoying cough was the desired aim, in the form of heroin or codeine. Pain, sleeplessness and severe cough have seemed clearly to indicate its use. The benefit from one-sixth grain of morphine to the patient who, racked with cough and distressed by the pain of a pleurisy, has not slept for twenty-four hours is too self-evident to need argument. There is too much fear of a hypodermic injection under these circumstances; fear both on the part of the physician and of the laity. Camphorated oil may be extremely helpful when there is a weak heart. In influenza in a patient who had been asthmatic and in whose chest there was much wheezing, he saw good come from administering adrenalin. Hypodermoclysis or proctoclysis may be helpful. He thinks that he saved one life by bleeding.

THE IMPORTANCE OF REST IN THE TREATMENT OF TUBERCULOSIS.

POTTENGER, in the *New York Medical Journal* of July 19, 1919, states that it has taken him many years to develop the programme which he now follows in the treatment of tuberculosis. In no other line of therapy does he feel that he has made greater advances in treating the tuberculous patient than in the application of rest and exercise. It is his invariable rule to put patients to bed on entering the sanatorium regardless of the degree of illness. His purpose is first to relieve the patient of all extra and avoidable demands upon his physical body that his energy may be directed toward fighting his infection. He also endeavors to secure as high a degree of nerve relaxation as is possible; so that by

the time the disease process is inactive and it is time to build up a strong physical state, the nerve balance will be restored to such a degree as to be able to do its part. In this connection it must be remembered that tuberculosis is a chronic infectious disease and that the diagnosis is rarely made until the disease has existed for a long time. During this time toxins have been exerting their harmful influence upon the nerve cells which results in rendering them unstable. As we endeavor to rest and exercise the physical body in order to restore physical strength, applying each measure when it is indicated, so do we through mental relaxation and psychotherapy endeavor to rest and exercise the nerve centers and psychical being so as to restore the nerve and psychic equilibrium.

The success of a measure depends much upon its technique. The technique must be adapted to the individual patient, to the physician who employs it, and to the conditions under which it is operative. What Pottenger considers the ideal technique for applying rest and exercise to the treatment of tuberculosis is the one that he follows in the sanatorium. The patient upon entering the institution is put to bed. If his maximum daily temperature is near or only a degree or so above the normal and there is no other condition to contraindicate it, he is allowed to get up to wash and go to the toilet, and to sit up while his bed is being made. His baths, however, are at first given by the nurse. If toxemia, as indicated by fever, or other contraindicating conditions are present, then the wash-bowl is brought to the patient while in bed; if severely ill, the urinal and bedpan are used and the bed is made without the patient getting up. Patients are treated with this degree of rest and care until signs of activity lessen and until such a degree of physical and nerve stability has been reached as to warrant the opinion that increased exercise will be beneficial, or at least not harmful.

This long period of rest in his experience is borne well by more than ninety-five per cent of patients. The first few days are the most difficult. Lying in bed relieves certain muscles and brings strain upon others. These latter ache, the same as muscles not accustomed to being used in walking ache after a long tramp. This should be explained to the patient. This discomfort disappears in a few days. The patient needs sympathetic encouragement during this first period, and if properly guided at this time will usually coöperate satisfactorily. This enforced rest and care is, as a rule, a new idea to the patient; it often impresses him with his first idea of the seriousness of his disease, and thus affords him the basis for a whole-hearted necessary cooperation. The few who will not coöperate usually make unsatisfactory patients and obtain unfavorable results. Fortunately this régime is usually quickly followed by some improvement and often by a very striking one. This shows the patient the value of the rest, and, if he is intelligent, usually calls forth an earnest coöperation.

Those patients who remain at home usually fail to secure the advantages that such a programme insures. They are living among the well, who as a rule are untrained in carrying out the programme; so the benefits derived are usually much below those obtained in an institution. There is a desire on the part of the patient to eat at the table, to go to the bath-room whether able to or not, to visit at various times and often with those who remain too long and tire the patient. The extra demands made upon the patient are often sufficient to turn the balance against him.

If the patient and those who care for him could only realize that whether or not healing will take place is largely a matter of whether the patient can provide the sufficient energy to carry on the ordinary processes of metabolism, meet the demands made by the amount of exercise taken, and still have a surplus for fighting the disease, the necessity for rest would be better understood. If they would then further realize that the act of sitting quietly in a chair requires twenty per cent more energy than lying quietly in bed, and that sitting up,

walking, or engaging in active conversation requires probably forty per cent more than lying quietly in bed, the necessity for rest would be better comprehended.

When the time comes to put the patient on exercise caution should guide each movement. He usually allows the patient to sit up only ten minutes the first day, and then increases by five or ten minutes a day according to the particular condition of the patient. His idea is to increase the exercise so gradually that no possibility of tiring can exist. When one-half hour is reached, he has the patient divide the time and sit up at two periods, one in the morning and the other in the evening. When one hour is attained, it is repeated for several days; so is two hours, and three, before advancing. The length of time taken to advance to two or three hours sitting up varies greatly according to the patient. The stronger patients are allowed considerable freedom about their rooms during the time when they are sitting up two or three hours. This is preparatory to walking.

When a patient is able to sit up for three hours without tiring he is ready, providing there are no other contraindications, to begin walking. On the first day he orders fifty or one hundred feet according to the patient, and has it increased by the same amount each day, stopping and repeating for several days when half a mile, one mile, and two miles have been attained. The ultimate distance to be reached depends upon the patient; so does the rapidity of attaining it. The maximum of some patients will be one-half mile, but that of others ten miles. When possible, he attempts to have the average patient walking at least two or three miles a day and the stronger ones five or ten miles before discharging them from the institution. Such a programme should then be followed for a long period of time. If the patient starts work of any kind, however, the amount of walking must be reduced so as to bring his expenditure of energy within his production, otherwise disaster will result. Patients who can walk ten miles a day without tiring will usually stand an ordinary day's work without harm, providing they begin by working a few hours a day and gradually increase the amount.

The success of this programme depends first upon thorough rest, dropping the patient's energy expenditure below the point of energy production; and then, when the patient is relieved of the extra demands made upon him by the disease process, increasing his ability to meet larger demands for increased energy by gradually accustoming him to an increased amount of exercise.

Time is the essence of this programme. It cannot be carried out quickly; only as rapidly as tuberculosis heals. The successful healing of tuberculosis requires a long time. It cannot be cut short with safety. There is a time when nearly all cases of clinical tuberculosis can be successfully combated by intelligent therapy carried out for a sufficiently long period of time. There is no definite set period of time when the disease should heal or be considered incurable. One patient will respond much quicker than another; one will be more conscientious in his treatment than another; and one will have a different tuberculous process from the other. The patient must be guided by the physician who knows, and keep fighting until the result has been attained.

FOREIGN BODIES IN THE AIR AND FOOD PASSAGES.

GRAHAM, in the *Archives of Pediatrics* for June, 1919, states that his observations led him to the following conclusions:

1. It seemed reasonable to believe that foreign bodies in the air and food passages in children were much more common than was supposed. Statistics tended to show that about 66 per cent of the cases of foreign bodies in the air passages occurred in children.

2. The period of latency of symptoms which followed the violent dyspnea and choking attack and later the gradual onset

and chronic character of the symptoms might lead one to fail to suspect the presence of a foreign body.

3. Foreign bodies were certainly often overlooked, as a study of the histories of many of the cases clearly showed.

4. The symptoms varied greatly. The peanut kernel set up immediately a severe laryngitis, tracheitis, and bronchitis. In the peanut cases the older child might survive the acute symptoms, but almost surely would develop pneumonia.

5. Metal objects remained in the lung for a very long while, and did comparatively little damage.

6. There were some foreign bodies that did not cast a shadow on the *x*-ray plate.

7. The location of a foreign body in the esophagus, that did not cast a shadow on the *x*-ray plate, might often be diagnosed by allowing the patient to swallow a bismuth-filled capsule. The *x*-ray showed the location of the bismuth capsule held in position in the esophagus by the foreign body.

8. The patient should not be urged to cough with the hope of expelling the foreign body inhaled in the lungs.

9. Foreign bodies were very rarely coughed up.

10. The physical signs and symptoms varied according to the composition, form, shape, and size of the foreign body.

11. One should suspect a foreign body, if the following conditions were present: an unexplained leucocytosis, localized symptoms in one lung that do not clear up under treatment, no tubercle bacilli in the sputum, and a gradual failure in weight and strength.

12. There were no contraindications to bronchoscopy except perhaps weakness in the patient, when time should be given the individual to rally in part.

13. Bronchoscopy should be performed as soon as possible after the entrance of the foreign body.

14. Children do not require the administration of an anesthetic for the performing of a bronchoscopy.

15. The necessity of taking a radiograph of every case that gives a history of having swallowed a foreign body cannot be too strongly emphasized.

16. The asthmatoid wheeze is a symptom of considerable importance.

THE INTENSIVE TREATMENT OF WOMEN WITH ARSENOBENZOL (SCHAMBERG).

GOODMAN, in the *American Journal of Syphilis* for July, 1919, states that the urgent necessity of rendering innocuous a number of women who were likely to be centers of syphilitic infection made it possible to use the intensive application of arsphenamine, as suggested by Pollitzer.

Two classes of cases are reported. The first and most important is a group in which the lesions of syphilis were present about the genitals and the Wassermann was four plus. There were fifteen women in this class; ten with condylomata lata; two with chancre; one with mucous patches and ulcers of the cervix; one with incised and ulcerating inguinal glands; and one with macular papular secondaries.

The second group of cases were seven women who presented no lesions of syphilis, but whose Wassermann reaction was four plus. The youth of these made it evident that the syphilitic infections were comparatively recent, and it was deemed advisable to give them arsphenamine in the hope of preventing recurrences.

The plan of treatment was on lines laid down by Pollitzer in discussions at dermatologic meetings, in personal conversations, and before the fortieth annual meeting of the American Dermatological Association. This plan is termed the "intensive" method in distinction to the "intermittent" method, which is better known. The intensive method as used by Goodman consists of the daily administration intravenously of arsphenamine for three doses. The dose for women is three decigrammes of arsenobenzol of Schamberg with 15 per cent of sodium hydroxide.

This mode of treatment is a desirable variant of the therapia sterilisans magna of Ehrlich. The theoretic reason for the failure of the latter is that the single dose kills a large number of spirochetes, but that some escape and later multiply, become as numerous as before, desensitized to arsenic, and hence more dangerous. Another reason is that the excretion of arsphenamine is begun almost as soon as injected, and that in the first few hours most of the drug is out of the body. The intensive method counteracts both these undesirable features because the concentration of the arsenic product in the blood is kept at an efficient high level for a longer time.

The only figures Goodman has access to are those in Wolbarst's translation, "The Treatment of Syphilis with Salvarsan," by Wechselmann:

"After the intravenous injection, arsenic was eliminated much more rapidly and completely than after the subcutaneous method. Paralytics given 0.3 gm. intravenously:

First day....0.0072 gm. arsenic was found.
Second day..0.0792 " " " "
Third day...0.0053 " " " "
Fourth day...negative.

"Investigations in other patients showed the same results; the excretion of arsenic having been completed within two or three days."

Since arsphenamine is essentially 30 per cent of arsenic, it appears that injected intravenously 90 per cent is excreted by the kidneys in the first two or three days. We were at this time unable to repeat any quantitative arsenic determinations either in the blood or urine, or to undertake the newer fields of arsenic in the spinal fluid following this intensive mode of therapy.

All except two of the women received the preparatory grain of mercury salicylate intramuscularly prior to the first arsphenamine injection. Catharsis was given the night before, and all were on limited diet of milk, soup, and bread for the three-day period. Water was given freely. Not a few complained of hunger, which is to be expected. Reactions, immediate or remote to the time of injection, there were none. This is attributed entirely to the care taken in the preparation of the solutions, the dilution, and the care of the patients. Immediately after receiving the injection, the woman was put to bed and kept there for four hours. After that, staying in bed was optional, but they were kept quiet and in the open air.

The clinical results are astounding. Syphilitic lesions disappear within a few days and the patient is no longer a menace. Chancres and condylomata lata are most readily overcome. Mucous patches and skin lesions are next amenable. In other words, infectious lesions are soon destroyed, which is a most important factor in the prevention of community syphilis.

Goodman was not willing, however, to permit the patients' future to rest with a single "three-day dose" trial, so that cases which had had infectious lesions and were under observation six weeks later were given a second session. Mercury salicylate in grain doses intramuscularly was given weekly.

The Wassermann reaction was repeated on all patients, and about half the cases gave a complete reversal from positive to negative. It is far too early at the time of report to speak of permanent results.

EXPERIENCES AT A RINGWORM CLINIC.

DAVIS, in the *British Journal of Children's Diseases* for June, 1919, states it is not necessary to explain the principles of treatment. It is well known that the hair falls after the scalp has been exposed to a certain dose of *x*-rays, which is measured by the changing of color of a Sabouraud pastille from green to a light orange. The pastilles, which are coated with barium platinocyanide, are sold in morocco-covered books, which always contain sample tints with which to match the pastille being used and thus measure the dose. For some years, however, he has used an instrument known as Corbett's radiometer. This instrument he finds gives a much more accu-

rate match than he can get with the sample tone as supplied in the book of pastilles. It would take too long to describe the instrument here, but it will suffice to say that the match is made by transmitted instead of reflected light.

In the great majority of cases of ringworm of the scalp epilation of the whole head is necessary. Occasionally where the disease is limited to a small area it is sufficient to treat that alone, but it so often happens that if that is done, during the time that elapses between the exposure and epilation the disease spreads to other parts of the scalp, and ultimately the rest of the head has to be done after all. When the whole head is to be exposed to the rays the treatment can be completed in five doses directed as follows: (1) To the area just above the forehead; (2) to the vertex; (3) to the left side of the head, centered just above the ear; (4) to the corresponding point on the right side; (5) to the occiput. The points upon which the rays are centered are arranged so as to be as nearly as possible five inches away from each other. If that is so and the target of the *x*-ray tube is six and a half inches away from the scalp the whole head is evenly irradiated. Those portions of the scalp which are intermediate between two centers of radiation receive such a proportion from each that in all they receive a single full dose. If the target of the *x*-ray tube be more than six and a half inches away the intermediate portions receive more than the points upon which the rays are focused, and if these points receive an adequate dose the areas where the doses overlap should receive more than that, and thus theoretically there is danger of an overdose and consequent disaster. As a matter of fact, however, he is now using a tube in which the target has to be eight and a half inches away from the scalp, but no harm results. This is because the margin of error is, fortunately, very large. He used to think that it was only about 10 per cent, but he is sure now that he was wrong. If an exposure be given just enough to make the hair fall, down is found on the scalp after all the strong hair has fallen. If a larger dose be given epilation is absolutely complete, and if a still larger dose be given the scalp is shiny after epilation. Danger only begins when the scalp is erythematous, and even then the hair will grow again as a rule.

Between the minimal dose required to produce epilation and the amount required to produce permanent alopecia there is a very large margin of error. In fact he thinks that if a tube working under certain conditions will just produce epilation in five minutes it will fail to produce permanent alopecia in ten minutes. He would not recommend any one to try this, but he knows of an instance in which a certain doctor inadvertently *x*-rayed the same area of scalp twice, and although the hair took some considerable time to reappear, ultimately it did do so and no harm was done. It is always wise to use the minimum dose that is sufficient to cause adequate epilation, not only for fear of making this error, but because the hair returns so much more quickly than when a full dose is given, so that the period of unsightliness is made as short as possible. A pleasing feature of the *x*-ray treatment of ringworm is that, as a rule, the new hair which grows is curly, even in children who previously have had straight hair.

What are the chief pitfalls in treating ringworm with *x*-rays? (1) *x*-raying the same area twice; (2) giving too large a dose; (3) not giving a large enough dose.

In order to prevent the same area being *x*-rayed twice it is important to reduce one's procedure to a routine—in other words, to have a sort of drill. It is his invariable custom always to expose the five areas in the same order, viz., the forehead, the vertex, the left side, the right side, and the occiput. After each successive dose is given the number of minutes taken to turn the pastille is entered up on the child's treatment card and the pastille itself is put aside; thus there are two checks: first, the number of pastilles used indicates the number of doses given, and hence it is obvious

which is the next area to be treated; secondly, the position of the patient, which has to be changed after each exposure, also indicates into which position it has next to be placed.

To guard against the second error of giving an excessive dose there is the primary duty of watching the pastille, but there is a certain risk, especially in a clinic where one has to examine other patients while the *x*-ray machine is working, that, absent-mindedly, one may forget to look at the pastille until too late. To obviate this there is a clock which is set for a certain time. When this time has elapsed it rings a bell quite loudly enough to attract the attention of any one, however absorbed for the moment he may be in another pursuit.

As to giving an inadequate dose, this is of course annoying, but does no harm, except that it means that the dose must be repeated. It is necessary, to be on the safe side, to wait four clear weeks before again exposing the insufficiently treated area.

RENAL INFECTIONS.

WINDELL, in *Northwest Medicine* for August, 1919, states that treatment may be summed up in removal of infective foci, drainage, and nephrectomy. The method of drainage depends upon the cause of interference with free drainage and consists in postural treatment, anchoring of loose kidney, removal of calculi, tumors either within or without the urinary apparatus, tying of aberrant arteries, dilating of urethral and ureteral constrictions, removal of prostatic obstructions, and relief of the condition by washing from the kidney pelvis of débris and pus too thick to run through the ureter, the eliminating of foci of infection from various regions of the anatomy, such as pus tubes, a chronic appendix, infected tonsils, infected teeth, infected gall-bladder, the cure of urethritis and vaginitis, and the relief of intestinal stasis.

In cases of acute pyelitis brilliant results are often obtained from ureteral catheterization, with pelvic lavage with some mild antiseptic. In chronic cases a cure from such treatment cannot be expected, but such patients will often receive marked relief from the treatment and the bacteriuria will be less marked.

In hyperacute cases of bacterial nephritis marked relief and symptomatic cure often follows drainage of the kidneys by an in-dwelling ureteral catheter. Lavage of the pelvis is contraindicated in the hyperacute cases. In acute cases of pregnacy the only effective treatment so far tried is the in-dwelling ureteral catheter.

In all cases the diet must be attended to, and one given carrying the least amount of waste matter to be eliminated by the kidneys. A diet should be so ordered as to affect the reaction of the urine in such a way as to render it a less favorable culture medium for the particular type of infection. Intestinal stasis and putrefaction must be corrected as far as possible.

Drug therapy consists in altering the reaction of the urine as indicated in the particular case, and in diluting the urine and in exciting diuresis according to indications. In many acute cases of bacterial nephritis it is not always wise to cause diuresis by drugs or even by liberal use of water.

Hexamethylenamine is the only effective urinary antiseptic that has so far appeared, and it is by no means a specific. It is effective only in an acid medium, and when administering it the urine must be rendered acid, preferably by the use of acid sodium phosphate. To be effective it must be administered in repeated and liberal doses. Some bladders will not endure the irritation set up in susceptible patients, the dose of ten grains having resulted in painful urination and in hematuria.

Some men claim wonderful results from postural treatment. The object of the treatment is to increase the costovertebral angle and the capacity of the lower chest, along with a deepening of the renal fossa. One man even goes so far as to say that he predicted a urinary infection in a case of faulty posture and afterward cured it by

postural treatment. This is going a little too far and calls for unwarranted credulity on the part of his readers. It is probable that postural treatment results in benefit not so much by its direct effect on the position of the kidney as upon its beneficial constitutional effect.

In all fulminating cases and in many cases of acute focal suppurative nephritis, nephrectomy is the indicated treatment. In pyonephrosis it is the only treatment. In all cases it is very important to know that the kidney remaining is going to be able to attend to all the needs of the economy.

DIET IN TUBERCULOSIS.

CLARKE, in the *Boston Medical and Surgical Journal* of August 28, 1919, states that most authorities agree that a tuberculous patient ought to have from 3000 to 4500 calories of food elements daily. Many of the markedly advanced types cannot take care of more than 2000. It is his opinion that enough attention has never been given to diet in either acute or chronic disease. We know that the obese eat the wrong food or too much, and that the diet of the thin person is generally faulty. They both need regulating. He has often thought that if the taste and desires of the tuberculous patient could be carefully considered and studied from his own standpoint, and something of a compromise made from the caloric regulation, he would consume much more food with equal benefit to himself and incidentally more pleasure. The sick, discouraged, idle consumptive needs all the pleasant anticipation and realization that is possible.

Gautier says: "It has been repeatedly written and said, every tuberculous patient who eats well and gains in weight is curable. This is unhappily not quite an exact statement, but it may be said that among these invalids resistance is proportional to appetite and to the digestive powers. Those only live long enough who feed well."

It is not his intention to go into much detail as regards diet lists, but to generalize upon the most desirable articles of food and to comment upon their administration.

Under the head of protein, milk comes first as the most commonly used and the easiest to digest. It is his belief that it should be used as the main food by all very sick persons; that it should take the place of tea very largely. It can be served hot with a bit of salt and well sweetened to be drunk at the end of the meal. Every one ought to be advised to avoid taking fluids of any kind while masticating their food. The teeth of all patients who have any chance of recovery should have the utmost care. Milk should be given mid-morning and afternoon if the patient eats well at meal-time. If the patient is on a liquid diet an egg can be added at these times. Milk should be kept absolutely sweet and well strained. It can at times be used sour or modified with the bacillus Bulgaricus. Scalding it seems at times to improve a diarrhea. Milk in various other forms may be occasionally used for the individual patient. At least one quart of milk should be taken daily. A little dilution at times favors its digestion.

Eggs in nutritive value and ease of assimilation occupy a position second to milk. They can be served in a variety of ways with the exception of frying. In feeding those who cannot take solids he often gives the double egg-nog, which consists of a third of a tumbler of milk, two eggs, salt to taste, one or two teaspoons of sugar, and flavored with vanilla, nutmeg, or chocolate. By this method a patient with pneumonia took twenty-four eggs daily for five days without any trouble. Eggs in the form of steamed custards flavored with chocolate are very palatable. Eggs served as a principal diet or taken raw should always be strictly fresh.

Meat comes third in the dietary of the tuberculous patient. Beef contains the highest percentage of protein, pork the highest of fat. Corned beef has the highest percentage of protein of any kind of meat, medium fat bacon the highest percentage of fat. Lamb and poultry follow

next in their protein contents. Skimmed milk cheese yields a higher protein percentage than beef. Dried peas and lentils yield a large per cent, also baked beans, and in a lesser proportion shelled beans. Gelatin shows the highest percentage of protein of any article of food.

The foods yielding up the highest percentage of carbohydrates are as follows: arrowroot, 97½; tapioca, 88; corn and rice, about 80; honey, 81; sago, 78; wheat flour, 65; toasted bread, 61; flour in the form of cracker and zwieback show from 70 to 75 per cent; dried peas and lentils about 60; potatoes, 20; in the form of chips, 39; bananas, 20. Some fruits show high carbohydrate contents, namely: dates, 78; raisins, 76; figs, 74; currants, 74; apples, 66; apricots, 62; this comes largely from the sugar they contain. We must never lose sight of the fact that sugar has the next highest caloric content to the high-class fat; that it can be added to many articles of food with much benefit to the patient as its taste results in more food being taken.

The highest percentage of fat is obtained from unrefined lard, 94; next comes butter, 85 per cent; then bacon, medium fat, 67 per cent; smoked bacon, 64 per cent; pork, 44 per cent; lean bacon, 42 per cent; red American cheese, 38 per cent; potato chips, 39 per cent. Brazil nuts, filberts, and California walnuts yield respectively 66, 65, and 64 per cent. For fish, salmon and turbot have the highest percentage of fat.

It is a comparatively easy matter to arrange the diet for the seriously ill as it generally consists of liquids. There is, however, besides those that have a good appetite and digestion, a relatively large percentage of patients who have a poor or indifferent appetite. It is for this class that we are at present most concerned. We must, of course, consider carefully the limits of a patient's digestion, but taking the average of the type we are now discussing, it seems to him that more attention should be given to the palatability of the food and if necessary disregard its caloric value. There is a satisfaction and encouragement to the patient in having eaten something. The food that a person relishes is said to digest more easily.

It is quite impossible to force nourishment for months and years as is done for the acutely sick during a few days. The secret of the problem is to make eating the most active feature of the cure.

THE SALICYLATES — THE STABILITY AND DESTRUCTION OF THE SALICYL GROUP UNDER BIOLOGICAL CONDITIONS.

HANZLIK and WETZEL, in the *Journal of Pharmacy and Experimental Therapeutics* for September, 1919, state in their conclusions:

1. Solutions of sodium salicylate gradually deteriorate on standing, the loss being greater with weaker solutions.

2. The destruction is due to some form of living matter such as fungi, since solutions containing a preservative (chloroform), and free from fungi, do not deteriorate.

3. Yeast destroys salicylate, but not nearly as much as the fungus which naturally grows in salicylate solutions.

4. Treatment of salicylate with hashed animal organs results in considerable loss of the drug, which in part, at least, is due to destruction of salicyl. There is no difference between the action of liver and other organs.

5. About 20 per cent of salicylate administered to normal human individuals is destroyed, since the loss cannot be accounted for in sweat and feces or by retention.

6. The destruction in animals (dog and cat) is even greater, amounting to about one-half of the salicyl administered.

7. The destruction of salicylate is markedly increased (about 40 per cent) in febrile conditions of man, drug habitués (alchohol and morphine), nephritis of both man and dog, and in Basedow's disease.

8. The destruction does not appear to be the special function of a given organ such

as the liver, since the excretion in certain diseases of the liver in man and in hepatic degeneration in animals was within the normal range.

9. The increased capacity of destruction, therefore, may be ascribed to the general increase in metabolism (catabolism) of febrile conditions and Basedow's disease; to retention with prolonged exposure to the destructive action of the tissues in nephritis.

INFECTIONS OF THE ORAL CAVITY AND THEIR RELATIONS TO SYSTEMIC DISEASE.

In the *California State Journal of Medicine* for September, 1919, BAGBY states that the diagnosis of septic teeth is not always easy. The usual means are transillumination, heat and cold tests, the electric current and the *x*-ray, all of which are at times deceptive. The nerve may have receded and will not respond to heat or cold, nor will it be readily affected by electricity; the *x*-ray may show a rarefied area due to an irritation or congestion of the tissues, caused by a tooth striking "out of line" or a filling in too close proximity to the nerve, which resembles the rarefied area where the pyogenic membrane (or sac) has broken and the pus forced into the cancellous tissue. The dentist drill will in such cases determine the vitality. If vital, by removing the irritating cause the area will usually clear up. On the other hand if it be non-vital and the infection has extended into the cancellous tissue, then he thinks that the only sanitary (if not sane) method of procedure is extraction, with thorough curettement. The adjoining tooth may show a perfect unbroken cyst, and so long as it remains unbroken there is not nearly so much danger of systemic infection as in the preceding case; however, he advises extraction and thorough curetting. The physician should familiarize himself with these conditions.

Bagby has seen or knows of many good vital teeth having been sacrificed on account of faulty radiographic diagnosis or lack of familiarity with dental radiography, which is a study of itself. In bone work 5-, 10- and 15-second exposures are used, while in dental radiography only 1½- to 2½-second exposures are used, which leaves the detail plain and distinct. If exposures are of longer duration one will have only a picture of the hard, bony structure. He is also certain that dentists as a rule are going as far wrong in attempting to cure teeth that will never be anything but culture beds for pathogenic microorganisms. In all cases we should have a complete physical diagnosis, including blood examination, differential count, and urinalysis, before and after treatment. The result would no doubt astonish and gratify both physician and dentist.

THE CARE OF THE NEW-BORN, WITH ESPECIAL REFERENCE TO PREMATURES.

HUENEKENS, in *Northwest Medicine* for August, 1919, states that melena neonatorum is common in new-born infants. The pathology in this condition is not yet clear, but the treatment is very gratifying. In moderate cases whole blood injected intramuscularly will often effect immediate cure. In severe cases indirect transfusion through the superior longitudinal sinus is necessary. The technique of entering the sinus is made comparatively simple by means of an instrument divised by Goldbloom.

The needle is adjusted at the desired distance and secured by the set-screw. The sinus is entered at the posterior angle of the anterior fontanel at right angles to the long axis of the skull. When the needle is in place in the sinus the aluminum block rests against the child's head and prevents movement of the needle in any direction. The crying of the infant raises the pressure in the sinus, so that when the obturator is removed the blood begins to flow. A syringe or gravity apparatus, as the case may be, is quickly attached to the hub and the procedure carried out in the usual manner. It is not necessary to replace the

obturator before removing the needle. The reason for making the apparatus with an obturator is to obviate the occasional possibility of blocking the needle during its passage through the skin. This has occurred in the writer's experience on two occasions while using an ordinary needle for sinus puncture.

While this method is comparatively safe, there is just enough possibility of hemorrhage of the brain to make it necessary to reserve this procedure for more serious cases. The practice of collecting blood for Wassermanns, etc., from the superior longitudinal sinus is not to be countenanced, when it can be obtained almost as easily from the vascular heel of the new-born infant.

This brings us to a consideration of congenital syphilis. Huenekens does not consider the symptomatology other than to emphasize the diagnostic value of the plantar surfaces. Anything abnormal on the soles of the feet, whether it be the typical pink satin infiltration or slight desquamation, bullæ, or even small areas of erythema, is suspicious of syphilis. What he does bring forward is that a large proportion of cases of congenital lues are born apparently normal and with negative Wassermann, but develop signs and symptoms and give a positive Wassermann in the first or second months of life. It is probable that these babies are infected during birth or shortly before, and only exhibit signs after the usual incubation period. A negative Wassermann, therefore, does not exclude syphilis, and should be repeated at the end of two months. If this fact is borne in mind in the interpretation of a negative Wassermann at birth, it will be found that the Wassermann performed by a thoroughly competent laboratory is even more reliable in congenital syphilis than in the acquired form.

Fever in the first few days after birth is relatively frequent. Aside from the well-understood cord infections, a nasopharyngitis, contracted from the mother or nurse, is altogether too common and may result in otitis or even meningitis. Influenza masks could be put to efficient use by requiring the mother or nurse with a "cold" to wear them to prevent infection of the infant. Huenekens has recently had a case of typical pyelocystitis in a new-born. But more common than these is the so-called "inanition fever," which perhaps to be more exact is due to lack of fluids. By forcing the water and increasing the breast milk the fever subsides within twenty-four hours.

Pemphigus neonatorum must always be borne in mind, especially on account of its highly contagious character. It is usually not fatal unless it involves a large portion of the body, and is then probably identical with dermatitis exfoliativa (Ritter).

In considering the cause of fever the external temperature of the room is highly important. The new-born infant is thermolabile and may develop a subnormal temperature or fever very readily, depending on the temperature of the surrounding air. A room temperature of from 70° to 72°F. is all that is necessary for the new-born infant, whereas it is customary in most hospitals to maintain a temperature closer to 80° or 85° F.

By all means the most important consideration in the care of the new-born is proper feeding, and it is the one in which the most mistakes are made. It is not an uncommon thing, at least in Minnesota, for a physician to decide within a week after birth that the mother has not sufficient milk to nurse her baby. Even worse than that, that the mother's breast milk does not agree with her baby, and so it is weaned forthwith. The prevalent idea among physicians that many mothers cannot nurse their babies is erroneous. Ninety-five per cent of mothers can nurse their babies wholly or in part for at least six months. In the majority of cases the lessened supply of breast milk is due primarily to the fact that the baby does not completely empty the breast, and not due to the mother's condition. If, in such cases, the breasts be thoroughly emptied after each nursing by manual expression—rather than the use of the breast pump—

the supply of breast milk can be markedly increased in a very short time.

Manual expression is performed, not by massaging the breasts, but by grasping the nipple at the border of the areola and stripping the nipple with the thumb and index-finger. This procedure takes a great deal of time. The physician should explain to the mother the importance of nursing her baby, and that by this method she may be able to do so. She must be warned that success depends entirely on her persistent, conscientious efforts, and that she must by no means become discouraged if the results seem slow in appearing. There is no such thing as poor breast milk; some is better and richer than others, but it is all good. The analysis of breast milk gives us no important information and need not be done except in very rare cases, is the conservative view of Huenekens.

REMINISCENCES OF TWO EPOCHS—ANESTHESIA AND ASEPSIS.

SMITH, in the *Johns Hopkins Hospital Bulletin* for September, 1919, states that the following incident led him to adopt a method of anesthetizing very feeble patients which has proved very serviceable. He was aiding a colleague in an operation for cancer of the breast on an old lady who was very fat, with a feeble intermittent pulse and nervous excitement. She had been prepared in the usual way with purgatives and simple diet. She had taken but little ether when her face became purple, her pulse disappeared, and after a struggle to restore her she was pronounced dead.

It happened that he had a duplicate of this case on which he was to operate on the following day. He was so shocked by this experience that he delayed the operation and studied the situation. The result was the conclusion that probably these patients' feeble and intermittent heart-action was due to overlaying and interstitial fat and required supporting rather than the depressing treatment then employed. Though this indication could be met by hypodermic heart stimulants he recalled two facts that determined his course, namely: (1) Larrey, in his memoirs of the Napoleonic wars, advised operations on soldiers while they are drunk, for they neither fear nor feel pain; and (2) hot milk is a quick nutrient and sustains a weak heart. Here were the remedial agents which his patient required to prevent fatal collapse.

After preparatory treatment he directed that at 8 o'clock on the day of the operation, which was at 3 o'clock, the patient should receive one ounce of hot whisky in a glass of hot milk, and the same must be repeated at 10 and 12 o'clock unless she was much disturbed. On visiting his patient at 3 o'clock on the day of the operation he found her in a most satisfactory condition. She had not required the stimulant the third time, having become quite excited about the details of the operation, which had taken fantastic forms in her enlivened but disordered imagination.

On entering the ward she greeted him with some affectionate terms, expressed her delight that the operation was about to be performed, and wished she could see the medical students present. Her face was flushd, eyes suffused, skin warm, and her pulse full and regular at ninety-six. She came under the influence of the anesthetic without a struggle and required an amount estimated at one-tenth that ordinarily given, the whisky having already secured partial anesthesia as Larrey suggested when he ordered wounded soldiers to be operated on while drunk. The pulse remained at ninety-six during the time occupied by the operation and the application of the aseptic dressings. She made an unusually rapid recovery; the pulse continued at ninety-six for several days; her appetite became vigorous; her happiness that the operation was over was extreme. But one dressing was employed, and when it was removed there was no sign of pus and only the yellow staining of serum.

During the many years that he has used this anesthetic, hot milk and whisky, he has not seen a patient fear an operation, nor suffer from shock or collapse.

THE RAPID ADMINISTRATION OF DIGITALIS IN CARDIAC DECOMPENSATION.

KAY and TUFTS, in the *California State Journal of Medicine* for September, 1919, state that recently White and Morris have reported favorably on this method of administration. They believe that the shortened time required for securing a digitalis effect will give this method an important use in selected cases. They were able to obtain digitalis effects in from twelve to twenty-four hours.

A similar method of giving digitalis has been used, for the past two years, in the wards of the Medical Clinic at the Stanford Medical School, in selected cases from twenty to twenty-eight cubic centimeters (3v-vij) of a standardized tincture of digitalis being given within twenty-four to thirty-six hours. Of this amount twelve to sixteen cubic centimeters (3iij-iv) were administered on the afternoon of admission, and four cubic centimeters (3j) were administered after each of the three meals on the following day. The administration was then stopped and was not resumed until clinical or electrocardiographic observations indicated a decline in the effect of the drug. This usually occurred after three to five days. The usual dose of one to two cubic centimeters three times a day was then given.

The chief indication for the administration of digitalis to patients suffering from heart disease is cardiac insufficiency, as manifested by dyspnea, cyanosis, and edema. The effectiveness of the drug varies according to circumstances. It is most effective when there is auricular fibrillation associated with a rapid ventricular rate and a marked pulse deficit. It is likewise effective in chronic arterial hpertension with broken compensation.

Of contraindications to the rapid administration of digitalis, the most important is the use of this drug by the patient shortly before coming to the hospital. If the patient has been taking digitalis, an unknown quantity may have accumulated in his body, and under such circumstances the rapid administration of a full dose may produce toxic effects. Occasional deaths have followed the intravenous injection of strophanthin; usually, however, in those who have been taking digitalis preparations shortly before the injection was given. While a similar danger may be present if very large quantities of digitalis are given rapidly by mouth to a patient who has been taking the drug shortly before, they believe that this danger is much less than from intravenous administration; partly because the drug enters the body less suddenly and partly because it can be discontinued before the full dose is reached if toxic symptoms appear. Other conditions which necessitate caution in administration are a delayed conduction time between the auricular and ventricular systoles, partial heart block, and numerous extrasystoles.

[In the hands of the general practitioner this plan is not safe. A partial block may be made complete, or grave cardiac changes occur. It may be justified if the electrocardiograph is used.—ED.]

FAT METABOLISM OF INFANTS AND YOUNG CHILDREN.

HOLT, COURTNEY and FALES, in the *American Journal of Diseases of Children* for September, 1919, state in their conclusion that the observations published in their paper indicate that corn oil and nut butter, the vegetable fats studied, are valuable foods for children, are exceedingly well borne, and are apparently digested and absorbed with ease. They feel, therefore, warranted in the belief that these articles may safely be introduced into the regular diet of children, and that to a considerable degree they may be substituted for the more expensive milk fat, given either as milk or as butter, but they should never entirely replace milk fat. How much milk fat is needed to furnish the amount of the fat-soluble vitamine required for normal growth and nutrition they have not yet the data to determine.

THE SYNTHETIC DRUG SITUATION.

LEECH, RABAK and CLARK, in the *Journal of the American Medical Association* of September 6, 1919, state that before the war the American physician was literally bombarded with new coal-tar synthetics, most of which were originated in Germany. In fact, it seemed that if a by-product in the manufacture of dyes could not be used for a dye *per se*, then a place might be found for it in the ever-increasing lists of medicaments. By clever advertising and propaganda among physicians, an artificial stimulation for coal-tar drugs was created which evidently yielded lucrative financial returns. As a result of the war, it is interesting to observe that of all the synthetic drugs imported into this country from Germany the American patents on which were controlled by the Germans (up to the time of our entrance into the war), the demand was only sufficient to warrant the commercial manufacture of four of them by American firms. Of course, a larger number of non-patented drugs, also imported from Germany, are now being made in sufficient quantities in this country; many of the drugs in this class were never patented or are the ones which have survived after the patent had expired, such as acetanilid, acetphenetidin, and acetylsalicylic acid.

In view of the agitation to found an institute for coöperative research as an aid to the American drug industry under the auspices of the American Chemical Society, it will be well for the medical profession to be on its guard against too enthusiastic propaganda on the part of those engaged in the laudable enterprise of promoting American chemical industry. Unless it is, it may be inflicted in the future, as in the past, with a large number of drugs that are either useless, harmful, or unessential modifications of well-known pharmaceuticals. It will be well also for the chemists—those engaged in this enterprise—to be sure that the product is of therapeutic value before asking its use as a medicine. The American medical profession has learned that relatively few of the many German synthetics were really valuable or decided improvements over established drugs. If American chemists desire to retain their prestige wiith the medical profession, they should earnestly endeavor to see that the advantages derived from the war and from such an institute as proposed are not abused in the worthy desire to popularize chemistry both educationally and commercially. They should realize that physicians are in no receptive mood for a flood of synthetics, even though "American-made."

On the other hand, the constructive possibilities of chemistry in the service of medicine should serve as a stimulus for American research. Notwithstanding all the pharmaceutical shrubbery from Germany sent to us, still it did contain some synthetics that were worth while. As therapeutics has been benefited by these organic chemicals, it is logical to reason by analogy that there remain other synthetics to be discovered which will occupy places of equal distinction in the modern materia medica. For example, vaccines are of undoubted merit in the field of immunology, but their action is, in the end, chemical; as soon as chemical technique is refined by medicochemical research it is quite possible that a definite chemical agent (synthetic) will supersede the indefinite bacterial vaccines. Obviously the American chemist has the opportunity of showing his resourcefulness in aiding the public health of America and the world. In this connection a coöperative institute devoted to purely scientific drug research, and governed in such a manner as to inspire confidence in its humanitarianism and unbiased judgment, should serve a most commendable purpose. The hopes of American men of science are for a monumental research institution—coöperative with all the allied professions—and, as the Chicago Chemical Bulletin stated, "stripped of all professional or commercial pettishness and not dominated by any one group of scientists."

As for the results of the work so far, they can be summed up in two sentences:

1. American chemists are producing syn-

thetic drugs formerly controlled by Germany, and thus have declared their independence of German chemicals.

2. Judging from the evidence at hand, we can feel assured that the quality of American synthetics will be second to none.

SUDDEN DEATH UNDER AN ANESTHETIC.

MILLIGAN, in the *British Medical Journal* of July 26, 1919, states that after having performed many thousands of tonsil and adenoid operations with so far fortunately no fatalities, he has been led to the following conclusions:

1. Leave the choice of the anesthetic or anesthetics and the method of administration to the anesthetist with whom you work and whom you trust.

2. See that the patient is not overgagged (a very common error) and that the tongue has not fallen back upon the larynx.

3. Avoid all preliminary swabbing of the fauces with cocaine, adrenalin, etc., drugs which under the particular circumstances are quite futile in their action and are at times actually dangerous.

4. Work with deliberation and not with undue haste (another very common error), and be careful to keep the operation area as dry as possible and well illuminated.

5. Avoid any undue traction upon the tonsil.

It is, he holds, a great mistake to regard either tonsillotomy or complete enucleation of the tonsils as a simple operation. In skilled and experienced hands probably all operations are relatively simple, but in his experience the operation of removal of tonsils and adenoids is an operation very frequently incompletely and badly performed, followed at times by postoperative deformities and permanent damage to the sense of hearing and the mechanism of speech.

Many hundreds of patients have to undergo a second operation, owing to the incompleteness of the first; and why? Because the profession and the public are led to believe that the operation is a simple one, which any one who has ever held a surgical instrument in his hand can perform—*hinc illæ lacrumæ*.

He has made it a rule to ask the anesthetist to induce deep anesthesia before commencing to operate, and has carefully avoided any undue traction upon the vagus by not overextending the head.

About half his operations have been performed under deep chloroform and half under open ether anesthesia, and he has yet to make up his mind, notwithstanding the many letters and discussions upon the subject, as to whether there is any real difference in the relative dangers of the two drugs, provided that one operates in conjunction with an anesthetist who knows his business and who sees that the patient is under the influence of the anesthetic before the operation is commenced.

THE VALUE OF PREANESTHETIC ADMINISTRATION OF BICARBONATE OF SODA IN PREVENTING ACIDOSIS.

GWATHMEY and TIBBITS (*War Medicine*, January, 1919) in a preliminary note are quoted as having conducted the following experiments:

The animal was placed under a bell jar in which the air or oxygen was forced at a fixed pressure (32 mm. Hg) through a bottle containing ether. The percentage of ether in the mixture passing to the bell jar was constant. The temperature could be regulated. The time was taken from the commencement of the administration of the ether vapors to the stoppage of respiration. The animal was then resuscitated and reanesthetized twenty-four or forty-eight hours later, but in the opposite way (if the first anesthetic was air-ether, the second was warmed oxygen-ether).

The final results show that warmed oxygen-ether was more than 2½ times as safe as air-ether. Two of the warmed oxygenated-ether animals were breathing regularly at the end of twenty-two minutes. One failed to respond to resuscitation, and

this was an air-ether experiment. The percentages mentioned above do not express the very great advantage as regards life with warmed oxygenated ether as against air-ether at room temperature.

To determine the value of bicarbonate of soda in preventing acidosis, guinea-pigs were given a hypodermic of 5 Cc. of a 3-per-cent solution of $NaHCO_3$; they were fed 5 Cc. of this agent in milk, mornings and afternoons. The animals were anesthetized in the middle of the day for six days, and on the sixth day, while they were still anesthetized, 2 Cc. of blood was withdrawn from the heart, and the same amount of physiological salt solution injected.

The experiments showed that when no $NaHCO_3$ was given, the alkaline loss was approximately the same for each anesthetic. When the preliminary $NaHCO_3$ was given, the pigs given the warmed oxygen-ether mixture showed a much higher blood alkalinity than those given the air-ether mixture.

Finally, as between the two agents used, the previous administration of $NaHCO_3$ is of even more importance than the selection of the anesthetic, as far as acidosis is concerned.

GUNSHOT FACTURE OF THE FEMUR.

BUCHBINDER (*Surgery, Gynecology and Obstetrics,* July, 1919) strongly commends caliper extension for fracture of the femur. This because immediate and continuous immobilization lessens the likelihood of sepsis.

The caliper modification of the nail extension is a particularly valuable method of reduction, because:

It is far more dependable in its extension and with less weight than a Buck's extension.

It permits complete exposure and opportunity for inspection of the thigh at all times.

It permits, as does no other method, early and continuous mobilization of the knee-joint.

It is more comfortable to the patient.

The frame described is an indispensable adjunct in all femur fractures treated by any method of traction, because without disturbing the relative position of the fragments throughout the period of convalescence—

The patient is made independent of his bed.

Frequent *x*-ray control is easy.

The care of an otherwise difficult soft-tissue injury is made relatively easy.

Finally, the thigh must be inspected frequently because of the possibility of recurring infection.

PROSTATECTOMY COMBINING THE ADVANTAGES OF THE SUPRAPUBIC AND PERINEAL METHODS USUALLY EMPLOYED.

OCHSNER (*Surgery, Gynecology and Obstetrics,* July, 1919) states that the reason that it is possible to execute the Freyer method with such ease and facility lies in the fact that, after the bladder has been opened through a suprapubic incision, the finger can be carried into the urethra and the mucous membrane cut or torn. The end of the finger then rests between the gland and its capsule, and the finger can be swept around the gland so that in a few moments it is entirely free. This is true except that in some instances there are a few adhesions to the urethra, but these can be quickly severed with scissors.

Any hemorrhage can be controlled readily by means of a gauze tampon placed firmly within the capsule. The entire operation is extremely simple and safe and quickly accomplished. Were it not for the troublesome drainage the suprapubic operation would be ideal.

The advantages of the perineal route lie in the fact that the hemorrhage can be easily controlled, the gland can be exposed to view, and there is ideal downward drainage. However, the method is too complicated and tedious to perform in patients in whom the margin of safety is very small at best, and it should not be done except by the surgeon who has become expert through much experience.

The following method, which the author has employed in a large number of cases, contains all of the advantages and none of the disadvantages of the two methods just described:

The patient is given a hypodermic of one-quarter grain of morphine and one-hundredth grain of atropine, half an hour before the ether is administered by the drop method. Everything is in readiness, so that no time whatsoever is lost from the beginning of the anesthesia to the end of the operation.

The bladder is irrigated with permanganate of potash solution, and a sufficient amount is left in the bladder to cause it to be moderately distended, but not sufficient to cause a possible rupture. The patient is then placed in the lithotomy position and a grooved sound is introduced into the urethra down to the perineum.

An incision is then made corresponding to the lateral incision formerly practiced in the operation of perineal lithotomy, extending from a point half-way between the scrotum and anus to a point half-way between the left tuber ischii and the anus, and extending down into the membranous urethra, which is opened here sufficiently to admit the point of an old-fashioned lithotomy knife. The sound together with the lithotomy knife is passed into the bladder, care being taken to carry the sound along the pubic bone in order to prevent the knife from cutting into the rectum, thus splitting the membranous and prostatic urethra posteriorly. The knife is then withdrawn, and the operator's finger is carried through the incision along the sound into the bladder.

The finger is now precisely in the same position that it would be if a suprapubic opening had been made, and in this fact lies the important advantage of this over other methods of operation, because beginning from above and entering the capsule of the prostate gland through the urethra, one is in a position to enucleate the prostate precisely as though the bladder were entered from above through the usual suprapubic incision and the prostate gland were to be enucleated according to the Freyer method.

This step of the operation should be carried out with the utmost care in order not to disturb the bladder or urethra unduly. If bands of adhesions are encountered a pair of blunt curved scissors should be carried along the finger, and these bands can be cut. Presently the entire gland is free from its attachments to the urethra, and the capsule and the gland is withdrawn through the perineal incision by means of Young's forceps. The area is then carefully explored with the finger, and occasionally an additional lobule of prostatic tissue is found which has to be enucleated.

The index-finger of the left hand is then introduced into the neck of the bladder, and the capsule of the prostate is caught by means of fine-toothed forceps, one being applied to the right and one to the left; a drainage tube, consisting of an inner tube one centimeter in diameter and covered in its middle portion by a second rubber drainage tube just large enough to slip over the first one, is introduced into the bladder, the inner tube extending into the bladder, and the outer tube into the capsule.

Ferguson's retractors are then applied to each side. The capsule is held in position by means of the fine-toothed forceps, and gauze is packed around the rubber tube into the capsule. The double tube prevents collapse, and offers a sufficient amount of resistance to make the tamponing effective for controlling the hemorrhage.

The rubber tube is held in place by means of silkworm-gut sutures which pass through the edge of the wound and the outer rubber tube.

Two days after the operation the tube and packing are removed. Occasionally one encounters a prostate gland which is hard and fibrous and cannot be enucleated. In this case it is removed by gnawing away piecemeal under guidance of the finger by means of the Ferguson gnawing forceps.

The entire operation can usually be performed in less than fifteen minutes. The shock is minimal, the amount of traumatism is not extensive, drainage is downward through the perineum in the most comfortable and most effective position, and hem-

orrhage is controlled by the tampon. The drainage tube and tampon are removed after two days, when the patient can sit up. After the fifth day the patient can take daily tub baths, and within two weeks the urine usually begins to pass normally.

Older surgeons, who have had experience in perineal lithotomy before the time when suprapubic lithotomy usurped this field of surgery, very properly will remember with what ease and facility stones were removed through a perineal incision representing the first step of the operation just described, how perfectly free from pain and discomfort these patients were after this operation, and how quickly and perfectly the healing took place, free from complications, with end-results which were most satisfactory.

Any surgeon who has previously performed suprapubic prostatectomy will appreciate the fact that the moment he carries his finger up into the bladder through the perineum the removal is quite as simple and easy through this route if the same method of enucleation is carried out, and the procedure is really more convenient. This is true especially in fat patients with thick abdominal walls. One must, however, always carry the finger first up into the bladder and proceed with the enucleation from above downward.

We have here then a method which embraces all of the desirable and none of the undesirable points of the two methods first described.

In case general anesthesia is employed, it can be discontinued after the first incision has been made because the operation will be completed before the patient realizes any pain. A very small amount of ether is required for the operation.

In all patients who are not perfectly good risks for ether anesthesia, we invariably make use of spinal anesthesia, which is borne exceedingly well by these cases. We use one grain of apothesine or novocaine with adrenalin.

It is well to dilate the sphincter ani muscle before beginning the operation in order to increase the comfort of the patient during the few days directly following the operation.

The after-treatment consists in the administration of an abundance of distilled water and the giving of light diet.

The tube and the tampon are removed after two days, and the patient is permitted to get out of bed. After the fifth day he is given daily hot tub baths, also an ounce of mineral oil at bedtime.

The postoperative course of these cases and the results are as uneventful and satisfactory as they were in the perineal lithotomies.

It is wise in every case to search the bladder carefully for the possible presence of calculi, which may otherwise be readily overlooked.

Thousands of old men die annually as a result of complications caused by obstruction due to hypertrophy of the prostate gland, and their lives could be prolonged many years. Others continue to live in great discomfort who could enjoy a comfortable old age if this form of treatment which can be carried out by any good general surgeon were systematically employed.

The complications of prostatic obstruction causing the greatest number of fatalities are pyelitis, uremia, and chronic and acute nephritis, and many of the cases suffering from these maladies die annually of pneumonia because with their lowered vitality they are more subject to this infection and less able to withstand it.

Of course, all preliminary preparation which is indicated for the purpose of getting the patient into condition for any type of prostatectomy must be employed with equal care in these cases.

The use of urotropin dissolved in distilled water for a period before the operation, and daily irrigation of the bladder with boric acid or permanganate solution, should be practiced in all cases in which the urine contains much pus and in which there is a considerable amount of residual urine.

In cases in which the passage of a catheter for the purpose of irrigation causes much pain or gives rise to chills or fever, temporary suprapubic drainage should be

employed for a week or two before making a prostatectomy.

The tube can be accurately fitted and sutured in place so that the urine will be siphoned into a bottle, leaving the patient dry and comfortable. This tube is left in place for one to two weeks before and after the prostatectomy. This preliminary operation should be done under local or spinal anesthesia.

TRAUMATIC RUPTURE OF THE NORMAL SPLEEN.

WILLIS (*Surgery, Gynecology and Obstetrics,* July, 1919) observes that the blood findings in human cases that recovered after splenectomy simulated the majority of those in experimental groups—that is, a gradual decrease in hemoglobin as low as 55 per cent, then a return to normal. The experiments detailed seem to establish the fact that the destruction of red cells following a simple splenectomy is by no means excessive. A few of the animals, however, showed a marked secondary anemia following splenectomy after hemorrhage, and as a result of these observations the author was led to the belief that in certain cases of splenectomy following hemorrhage death occurs as the result of a severe secondary anemia, out of proportion to the amount of blood lost and probably incident to the absence of the spleen.

He calls attention especially to pain in the left shoulder as a symptom of considerable diagnostic importance. This pain is undoubtedly referred from the diaphragm and is due to subphrenic irritation from blood-clots around the spleen. Pain of a similar nature in cases of diaphragmatic pleurisy has been referred to by Capps, who states that "the central portion of the diaphragm receives its sensory nerves from the phrenic nerve, which carries afferent impulses to the cervical cord, and sets up reflex pain in the corresponding spinal segments, namely, the third and fourth cervical."

This localization of the pain was apparently first noted by Stubenrauch and Schulze.

The symptom is thus graphically described in Fauntleroy's paper: "He complained of a curious deep-seated pain in the left shoulder, which was not increased by movement of the joint, and, as examination showed no contusion or dislocation, it was thought to be a slight sprain in this region, due to the effort to catch himself in falling. It is to be noticed, however, that this pain disappeared completely after operation, and it is possible that it has some diagnostic value when the spleen is traumatically involved." Brogsitter, however, believes that pain in the left shoulder is of little diagnostic importance, as it is seen in other instances of injury of abdominal organs, particularly of the left lobe of the liver.

In a paper published in 1909, Brogsitter reviews the literature on traumatic rupture of the spleen, and states that up to that date there had been reported 203 cases treated by surgical means. This number may be divided into two series: the first one up to and including the cases summarized by Berger in 1907, comprising a total of 168 cases; the second up to and including the cases reviewed by Brogsitter, a total of 35. In the first series, splenectomy was performed in 135 instances, with a mortality of 38.7 per cent. In the earlier papers there was no distinction made between ruptures of the normal and of the diseased spleen, but Brogsitter analyzed a series of 66 cases occurring between 1902 and 1909, 47 of which were ruptures of apparently normal spleens, while the remaining 19 were instances of rupture of the diseased spleen. The mortality after splenectomy was almost the same in these two series, being 35.3 per cent for the normal and 33.3 for the diseased spleens.

Barnes, in 1914, reviewed the literature since Brogsitter's paper, and finds reports of 30 cases of rupture of the normal spleen occurring between 1909 and 1914; his own case making a total of 31. Splenectomy was performed in 26 instances, with a mortality of only 7.6 per cent. There have occurred since Barnes's paper, or were omitted

from his summary, 53 cases of rupture of the apparently normal spleen, the reports of which have been available, the author's cases increasing this total to 57. Splenectomy was performed on 55 patients, with a mortality of 28.88 per cent. Suture, tamponade, or a combination of these two procedures appears to give a distinctly better result, for the mortality of patients treated in this way for the four series is respectively 25 per cent, 0 per cent, 0 per cent, and 8.3 per cent. Too much importance should not be attached to these figures, however, for the condition of the patient at the time of operation undoubtedly was the chief factor in influencing the mortality.

XYLOL IN DERMATOLOGY.

Xylol is not only a ready dissolvent of fatty matters, but is antiseptic and parasiticidal as well.

L. BORY recommends the following ointment:

Iodine, 1 g.;
Xylol, 15-20 Cc.;
Soft paraffin, to 100 g.

The iodine is first dissolved in the xylol, and the solution is then incorporated drop by drop with the paraffin by means of a glass rod. The ointment is strongly antiseptic and has great penetrative effect, but is a little irritating. One application to the pubic region will effectually destroy crablice. It is useful in moderate infections of the skin, such as herpes circinata, sycosis, and yields results in the treatment of impetigo, ecthyma, folliculitis, and eczema (after the acute stage).

A more fluid form for use as first dressing to wounds is:

Iodine, 1 g.;
Xylol, 20 Cc.
Liquid paraffin, 80 Cc.

Iodoform is soluble in 1 in 10 of xylol, and is then used for the treatment of soft sores and their complications:

Iodoform, 10 g.;
Xylol, 20 g.;
Soft paraffin, to 100 g.

This ointment can be thickened by the addition of bismuth carbonate. For suppurating buboes a liquid preparation should be used in which the soft paraffin is replaced by liquid paraffin.

For psoriasis, a useful application consists of:

Coal tar, 3 parts;
Xylol, 1 part.

Bory prescribes the following for the purpose of venereal prophylaxis:

Iodine, 3 g.;
Xylol, 15 g.;
Wax, 32 g.;
Olive oil (washed in alcohol), 50 g.;
Perfume, q. s.

Or,

Calomel, 38 g.;
Xylol, 12 g.;
Wax, 16 g.;
Olive oil (washed in alcohol), 20 g.;
Perfume, q. s.

To be divided into crayons, 15 mm. in diameter and 5 cm. in length, and used for inunction after coitus.—*Journal des Praticiens,* March 8, 1919; *The Practitioner,* June, 1919.

BLINDNESS.

An editorial on this subject (*American Journal of Surgery,* July, 1919) quotes from Best's book on "The Blind" as follows:

"The single chapter devoted to blindness and accidents merits a reading by ophthalmologists and surgeons, as well as by those interested in the social welfare of men. Here one grasps the significance of industrial hazards that are involved in work with abrasive wheels, clipping, cutting, or driving metal, hewing or carving of minerals, cutting wood, sand blasting, the handling of explosives, and the dangers from the bursting of boilers or gauges or the breaking of belts. The dangers of powerful glares and intense heat, the likelihood of injury by hot or noxious chemical substances, particularly those used in connection with work with chemical and explosive industries, are made patent.

"By reverting to the general table giving the several causes of blindness according to the census returns, we learn that nearly one-fifth (18.3 per cent) of all blindness

from accidents and injuries is due to explosives, including those in mines and quarries, those in construction and similar work, and those from bursting shells in military actions; nearly one-eighth (11.8 per cent) to firearms; nearly one-tenth (8.9 per cent) to flying objects (not occurring in explosions); 5.9 per cent to falls; 5.7 per cent to cutting and piercing instruments; 4.1 per cent to burns; 2.2 per cent to animals; 2.2 per cent to blows to the head; 2.0 per cent to explosives not referred to above; 1.6 per cent to explosions of a nature not indicated; 1.3 per cent to unfortunate results of operations; 0.8 per cent in mines and quarries; 0.4 per cent to machines; and 34.8 per cent to miscellaneous causes. Of blindness resulting from foreign substances in the eye, about half is due to acids and other substances of chemically destructive nature, and half to dust and other particles. Of that resulting from poisoning, 22.3 per cent is to be ascribed to wood alcohol; 18.5 per cent to tobacco; 17.6 per cent to chronic lead poisoning; 11.1 per cent to alcohol other than wood alcohol; 8.3 per cent to chronic occupational poisoning other than from lead; and 22.3 per cent to other forms of poisoning."

In the way of prevention it is important to realize that types of accidents vary somewhat in their most frequent occurrence with the period of life.

"Injuries from cutting and piercing instruments are most common in the early years of childhood, being the leading single cause among accidents from the first to the ninth year, after which time they decrease more or less rapidly. Injuries from falls also happen most often in this period. Injuries from firearms are of greatest frequency in the late years of youth, being the foremost cause from the tenth to the nineteenth year, after which there is a gradual decrease. Injuries from explosives show the largest proportions in youth and early and middle adult life, or during the most active working period, representing from the twentieth to the fifty-fourth year the chief cause of blindness from accidents. Injuries from flying objects and from burns, though fairly constant through life, reach their highest mark toward middle life, those from the former being also the leading cause after the fifty-fifth year. Blindness from exposure to heat, from foreign substances in the eye, and from poisoning are, like injuries from explosives, of greatest occurrence during the working period of life. Blindness from strained eyes increases with advancing years."

These few figures are most suggestive of the lines along which attention must be directed in order to aid in the work of conserving vision. Basic figures are always requisite for framing programmes. Legislation can be effective only when soundly founded upon facts. The gleaning of statistical material from all sources in the country is an essential prerequisite for visualizing the sources of accidents to the eyes. The establishment of divisions for receiving reports of accidents of all kinds and of tabulating results is most necessary in order properly to devise laws and ordinances for the protection of the young and the old, in civil or industrial life.

AMBULATORY TREATMENT OF FRACTURE OF THE SURGICAL NECK OF THE FEMUR.

BRADFORD (*Boston Medical and Surgical Journal,* July 3, 1919) records the case of a somewhat feeble woman who as the result of a fall fractured her femur. Diagnosis was corroborated by the *x*-ray.

It was determined to avert a calamitous outcome of the injury by ambulatory treatment, making use of the traction abduction appliance which had been found to be of great service in the treatment of hip disease. This appliance, which may be defined as a perineal ring crutch with a traction attachment and an abduction arm pressing upon the side of the perineum opposite the fracture, furnishes more fixation at the hip than can be obtained by a plaster spica. It also provides a practical amount of abduction without the encompassing pressure of a plaster bandage, which causes atrophy of the fat, muscle, and, as has been shown by

skiagram, also of bone tissue, and therefore is not favorable to bone healing. It has been found by experience that the traction abduction splint, even in the acuter stages of hip disease, provides thorough traction and sufficient fixation to permit a painless change of position and motion in bed, and that locomotion with crutches is not only feasible but beneficial in the subacute stages and favors a better cure.

It was therefore thought that the apparatus might be useful in the treatment of this fracture; that traction would pull the fragments into place, furnish fixation, give the proper abduction, and allow the patient to sit up and be moved from the bed without injury; that the pericapsular ligament and muscular fasciæ would be prevented from cicatricial contraction, preventing resulting joint stiffness: and that early crutch locomotion with splint protection would be made possible. The result justified the treatment. The patient was first placed upon the gas-pipe bed-frame and traction applied by the use of weights and pulleys; but within forty-eight hours, or as soon as the apparatus could be made, the traction abduction splint was substituted for traction bed weight and pulley traction and the patient allowed to move about and to be moved more freely. The pain and discomfort which were experienced the first night were controlled by the hypodermic administration of 1/12 of a grain of morphine, but at no time was any other medication indicated except an occasional mild laxative; and on February 28, ten days after the injury and eight days after the splint was applied, the patient sat up in bed to eat her supper. Seven days afterward, on March 7, she left her bed and spent part of the day upon a couch. Five days later, on March 12, she moved about her room in a crutch walking frame in which she had greater confidence than upon a pair of crutches. She soon became accustomed to the use of crutches, however, and in pleasant weather was able to be out-of-doors.

All traction was removed on April 15. Fifteen days later the splint was removed entirely at night and for short periods which were gradually increased each day, until it was taken off altogether on May 18, three months after the injury.

The patient gradually regained the use of her leg. In the autumn she felt able to resume her work and reëntered the employ of the hospital. She can flex the thigh to a right angle, move the joint freely, and walk several miles without limping or the slightest discomfort. There is no appreciable shortening—in fact, she considers herself fully recovered and capable of work, which keeps her upon her feet eight or nine hours daily.

Two other cases, coming under the writer's observation in consultation, have since been treated by the same method—one a fracture of the neck of the thigh in a woman of forty, the other a fracture of the femoral shaft in a woman of seventy-five, and the results in each have been most gratifying.

THE CLINICAL VALUE OF SEROLOGICAL EXAMINATIONS.

HOPKINS (*New York Medical Journal*, July 12, 1919) notes that since Widal's discovery that the blood of typhoid-fever patients agglutinated the bacillus typhosus, there have been many attempts to utilize the phenomena of serum agglutination in the clinical diagnosis of infectious disease. Such methods have proved most useful in prolonged infections, of which tuberculosis and syphilis are the most pronounced examples. In very acute infections, such as pneumonia and meningitis, the diagnosis must be made before serum antibodies are developed, and we are dependent on bacteriological methods for diagnosis.

The Widal reaction, as ordinarily performed, has lost much of its former value on account of the wide-spread use of prophylactic vaccines, which of themselves stimulate the production of agglutinins. It has been asserted, however, by Dreyer and his coworkers that if quantitative determinations of the patient's serum agglutinins are made at intervals of three or four days

a diagnosis may be arrived at. Vaccination against typhoid or paratyphoid is followed by a rapid production of agglutinins. The curve rises to a sharp apex from two to three weeks after the last injection and then falls, very rapidly at first, but afterward more and more slowly, not reaching normal for a year or two. The fall is so gradual that if, after the first month, determinations are made at short intervals, difference is observed in the titer. In typhoid fever in an unvaccinated individual the agglutinin curve is somewhat similar, rising to a sharp apex about the twenty-first day and falling rapidly during the fourth week. In a patient who has been vaccinated the curve is similar in form, but starts at a higher level and does not return to normal as promptly. If we examine the serum from a vaccinated patient several times during the second or third week of illness we will find the titer rapidly increasing, or during the fourth or fifth week we will find it falling. Therefore, while the actual amount of agglutinin found on one determination is of little significance, because it is largely dependent on the previous vaccination, a typical rise or fall in the titer on successive determinations is of aid in diagnosis. The technique must be standardized to insure that the results of the successive tests are comparable, and the interpretation of the findings requires some experience, as paratyphoid, or at times wholly unrelated infections, will cause fluctuations in the amount of typhoid agglutinins. Sometimes curves are found in other infections quite indistinguishable from those of typhoid.

Agglutination reactions have been used in the diagnosis of bacillary dysentery. In this disease, where the infection is usually limited to the intestinal mucosa, agglutinins are not developed as regularly as in typhoid, and some patients never show a characteristic rise. It occurs, however, in many cases. An agglutination of the Shiga bacillus in dilutions of 1:50 or higher may be considered diagnostic of past or present infection. In the Flexner type of infection, however, agglutination is not diagnostic unless it reaches 1:250, as Rajchman and Western have found that normal individuals may agglutinate up to that point. The agglutinin test has also proved reliable in the diagnosis of Malta fever.

In deep-seated infections by the gonococcus, complement fixing antibodies have been found fairly constant in the blood. The reaction is therefore of especial value in such infections as arthritis and epididymitis, and, to a less extent, in prostatitis and chronic urethritis. It is also widely used to determine when cure has been obtained. Very little has been added to our knowledge of the clinical value of the reaction since the original work of Schwartz and MacNeil. Quite recently, however, Captain D. Thomson, of the British army, has described a new method of preparing the antigen, for which he lays claim to a higher proportion of positive reactions, especially in acute urethritis, a condition in which most previous workers found the blood usually negative. Thomson reports that in all acute cases tests gave a positive reaction by the end of the first week, and that of 248 cases of all types, ninety-two per cent were positive. None of the workers so far have reported on a large series of non-gonorrheal cases, and in reviewing the somewhat meager literature on the subject one is impressed with the fact that such study is needed to establish the specificity of the reaction.

The work of Besredka and of Petroff, Miller, Bronfenbrenner, and many others in this country has recently aroused much interest in the value of the complement fixation reaction in tuberculosis. The interpretation of the results is difficult, but at least it furnishes additional evidence which may be brought to bear in doubtful cases. The antibodies are not found in all cases of clinical tuberculosis, and they are present in not a few persons who have no clinical symptoms, though doubtless harboring a latent infection. They are found more constantly in the early than in the later stages of the disease, and more constantly in active than in inactive cases; but a posi-

tive reaction is not proof that a case is advanced or that it is active. The results of various workers have differed rather widely, but the recent study of Brown and Petroff is representative of the more reliable work. They found in cases in the first stage, fifty-one per cent; in the second stage, seventy-three per cent; and in the third stage, eighty-one per cent positive. Positive reactions were obtained in eighty-one per cent of active cases, in sixty-one per cent of inactive cases, and in seventy-nine per cent of those in which activity was questionable. Their number of control cases was small; nevertheless, five patients gave a positive fixation who presented no other evidence of the disease.

Among the rarer infections, there are two in which the complement fixation test seems of definite value, namely, glanders and echinococcus cyst.

The Wassermann reaction has been the subject of many controversies as to its nature, the technique of performing it, and the specificity of the results obtained. There is now at hand an immense amount of evidence as to its clinical value. It is generally agreed that the reaction appears from two to eight weeks after the development of the initial lesion, that it is present in nearly 100 per cent of active secondary cases if uninfluenced by treatment, and in eighty to ninety per cent of tertiary cases. About seventy per cent of tabetics show the reaction in the blood, and an additional twenty per cent will give the reaction if the spinal fluid is also examined. The earlier statistics gave nearly 100 per cent positive results in paresis, but as this condition is being recognized in its earlier stages a few cases are being found with a negative reaction. As to congenital lues there are fewer published statistics, but Craig reports eighty-two per cent positive.

Indicating its specificity it must be remembered that the other spirochetal infections, yaws and recurrent fever, give the reaction, as do a considerable proportion of cases of trypanosomiasis and of leprosy. To these four exceptions we may add malaria, scarlet fever during the febrile stage, and blood taken during ether anesthesia or post morten, though the evidence is conflicting as to these last four conditions.

In a suspected primary sore, untreated, if the Wassermann remains negative for two months syphilis may practically be excluded. In a suspected secondary lesion, untreated by arsenic or mercury, a negative Wassermann, again repeated to avoid error, practically rules out syphilis. If the question is of tertiary or so-called parasyphilis, a negative Wassermann is by no means conclusive, but certainly weighs against the diagnosis of lues. In controlling treatment, a negative Wassermann does not of course prove that a patient is cured, as we know that an active tertiary lesion may coincide with a negative Wassermann. But of all the symptoms of syphilis the Wassermann is the most persistent, and if a patient is free of other signs, such as changes in his spinal fluid, and his Wassermann remains negative for a year, even after a provocative injection of salvarsan, that is the best evidence that we can obtain of a cure.

In interpreting negative reactions, however, the finding of Craig and Nichols should not be forgotten, that if the patient takes a large amount of alcohol he may temporarily convert a positive into a negative reaction.

TREATMENT OF EPITHELIOMA BY RADIUM.

Boggs (*American Journal of the Medical Sciences*, July, 1919) in the course of an article on this subject states that Paget's disease or eczematous epithelioma of the nipple is classified by most dermatologists under epitheliomatosis or carcinoma of the skin. It is like superficial epithelioma, the onset is slow, and the condition suggests an eczematous involvement of the areola of the nipple. The process begins with a moderate inflammation exhibited as redness and scaling involving the nipple areola. Murphy called attention very forcibly in the Year's Progress of Medicine and Sur-

gery, 1915, to the fact that Paget's disease is cancer from the very first, and that even in the early cases there was a mortality of over 90 per cent though submitted to surgical operation. Boggs has treated cases of Paget's disease by radiation alone, and has patients clinically cured for over ten years. This corresponds with the experience of many others. The treatment should consist in radiation, not only applied locally, but to the adjacent glands as thoroughly as when given postoperatively for carcinoma of the breast. If these cases are treated early, when there is only the eczematous condition present, and treated thoroughly, the results are rather uniform. It is to be remembered that local treatment helpful in eczema has no effect on this condition.

CEREBRAL HEMORRHAGE IN THE NEW-BORN.

WARWICK (*American Journal of the Medical Sciences,* July, 1919) states that Little, in 1861, was the first to emphasize birth injuries and their results in later life; as shown by the development of impaired mentality or the palsies or contractures in older childhood. But as at that time the effect of pressure on the cortex was but imperfectly understood, it was left to Sarah McNutt, in 1885, to establish the relationship between cerebral hemorrhage at birth and Little's disease of later life. This was done by autopsy reports on ten carefully studied cases. Of these ten, seven were vertex and three breech presentations, showing that prolonged pressure on the head is not always responsible for the condition. Of the seven vertex presentations, five showed hemorrhage over the cerebrum and two below the tentorium. The hemorrhage in the breech presentation was over the cerebrum in all three.

Of the occurrence of cerebral hemorrhage as compared with other causes of death in infants only meager information is found. Holt says that one-third of all deaths during or as the result of parturition are due to hemorrhage, but gives no exact numbers based on autopsy findings. Cushing found that in studying still-born infants for another purpose, many showed cerebral hemorrhage. From the Pathological Institute of Kiel, Weyhe reported that in 959 autopsies on infants, 122, or 12 per cent, showed intracranial hemorrhage. In 80 of these cases the hemorrhage was subdural, in 56 subarachnoidal, in 35 intracerebral, and in 21 intraventricular. Of these 122 cases 23 showed evidence of congenital spyhilis. Döhle found hemorrhages occurring in 13.7 per cent of his series. Beneke observed in 100 autopsies on the new-born laceration of the tentorium, resulting in hemorrhage in 14 cases. Osler quotes Litzmann as finding 35 cases of hemorrhage in 161 autopsies, Parrot has noticed bleeding in the subdural space 26 times in 34 autopsies of the new-born, and Spencer finds in 130 post-mortem examinations on still-born infants 53 cases with hemorrhage under the pia-arachnoid. Sachs in autopsies on 78 cases of infantile hemiplegias noticed hemorrhage in 23. Couvelaire saw intracranial bleeding in 18 per cent of autopsies on prematures born with easy and spontaneous labors. Archibald reports in 74 post-mortem examinations that intermeningeal hemorrhage occurred in 32, and this hemorrhage was extensive in 19 and extradural in 5.

As to the etiology of these hemorrhages one finds as many theories suggested and advanced as there are authors. All agree, however, that the condition is as frequent in cases of normal or precipitate delivery as in difficult labors. It has also been shown that hemorrhage may occur even before birth.

Abel places the causes under two groups: (1) Tearing of the vessels due to molding of the head in such cases as contracted pelvis, forceps deliveries, etc.; (2) backing up of the blood in the sinuses and veins in asphyxia. He points out that during labor the pressure on the fetus is raised in the uterus, and especially before the membranes are ruptured, is evenly distributed, thus causing no congestion or stasis of the blood in the child's head. But when the head is

born it is released from the uterine pressure still acting on the body, and the result is a marked congestion or stasis of the blood-vessels of the head. Since the skull cannot expand to any marked degree the delicate-walled veins on the surface of the brain may become extremely engorged and often rupture. The sutures permit of some expansion, and Abel thinks that this is the reason hemorrhage is rarely found in the neighborhood of the sutures.

In the pediatrics service at the University Hospital during the last three years 36 routine autopsies have been performed on still-born babies or those dying early in infancy. In this series 18, or 50 per cent, showed definite hemorrhages in the dura, over the brain, or in the ventricles.

One very interesting point, however, is that in eight of these infants gross hemorrhages were found in other organs besides the brain. It thus appears quite clear that in a fairly large percentage of cases showing intracranial hemorrhage such lesions are merely incidental to a general hemorrhagic diathesis, the syndrome being usually grouped under the heading, "Hemorrhagic Disease of the New-born." Five of the eight vomited blood before death. Of the three remaining cases without clinical symptoms, one revealed besides the hemorrhage over the brain an extravasation of blood into the right adrenal, another massive hemorrhages in the lungs, and the third hemorrhages in the pericardium and skin. These facts emphasize the value of routine estimations of the coagulation-time on the blood of new-born infants. Early recognition of decreased coagulability of the blood and prompt treatment of such cases by the injection of whole blood or serum might obviate otherwise fatal hemorrhages in the brain as well as other organs.

Considering the subject as a whole it becomes at once clear that the most frequent source of this bleeding, regardless of cause, is rupture of the superficial veins which pass over the surface of the brain into the longitudinal sinus. This may be explained by the fact that these veins are in a comparatively unprotected position, and hence more susceptible to injury from either displacement or abnormal distention. Of all vessels in the body these are the ones most exposed to the injuries and accidents of labor and birth.

A general consideration of cerebral hemorrhage in new-born infants emphasizes two very important facts: (1) that the condition is often a complex disease syndrome giving rise to diverse clinical symptoms, modes of death, and pathological findings; and (2) that it is not brought about by any single cause but by an interrelation and interaction of a varying number of causes which may be found in the circumstances governing labor and in the condition of the mother or of the child. Several causes may often be present, any one of which in itself might have been the responsible factor.

ANAL FISSURE.

FANSLER (*The Journal-Lancet,* July, 1919) believes that the diagnosis of anal fissure can nearly always be made from the history alone. If not, surely from a direct visual and tactile examination. In cases where the fissure has been present only a short time, the hypodermic injection of a quarter grain of morphine and cocainizing the anal canal with a cotton applicator will often permit a sufficient stretching of the anal sphincter to produce a cure. Usually this is not enough. These patients, almost without exception, are nervous and apprehensive, and so they are given one-quarter grain of morphine or one-third grain of pantopan hypodermically. This being done, it is now necessary to desensitize the anal canal sufficiently to allow the introduction of the index-finger. To accomplish this, a well-lubricated 1-cm. Kelly open-air cystoscope is introduced into the anal canal, and the obturator withdrawn. An applicator saturated with 5-per-cent cocaine solution is now passed in, and the cystoscope withdrawn over it, leaving the applicator in place in the anal canal. In a few minutes

anesthesia is such that the index-finger, which is to act as a guide, easily may be introduced.

In the worst cases the sphincter and adjacent tissues are infiltrated with 0.5-per-cent novocaine or apothesine after the method of Braun and Allen. That is to say, the perianal region having been cleaned with iodine and alcohol, a needle is inserted subcutaneously near the anus, and the perianal skin is infiltrated. Then inserting the index-finger into the rectum and hooking it around the sphincter, the needle, which is held in the other hand, is inserted straight into the sphincter muscle and adjacent structures are infiltrated. This requires a long needle, as the infiltration is frequently carried in to the depth of three or four inches or more. Four such infiltrations are made parallel to the anal canal and rectum at points equidistant around the anus.

Braun says the insertion of the finger as a guide is unnecessary for those experienced in the work. By inserting a needle along the base of the fissure and injecting the underlying tissue and muscle adjacent to it, he has been able to produce anesthesia sufficient for his purpose. A Pratt bivalve speculum is inserted and the blades slowly opened. If this is done very slowly, sufficient dilatation can be secured with very little pain. A real divulsion or actual "tearing asunder" of the sphincter fibers is unnecessary, and gives added pain and delays recovery. The muscle stretched, the fissure itself is next attended to. If no scar tissue is present, it is not touched, or at most simply painted with 5-per-cent silver nitrate. If scar tissue is present, the area is grasped with a pair of tissue-forceps and excised *in toto*. The sentinel pile, if present, is removed.

The patient is able to go home soon after the treatment is completed, and to return to work in twenty-four hours or less. Little after-treatment is necessary. It is essential that the bowel movements be kept soft. To accomplish this liquid petrolatum or cascara has proved the most satisfactory. The fissure itself may be treated with some mild dusting-powder or cauterized with silver nitrate if granulation tissue forms and delays healing. Healing is usually complete in from two to three weeks.

MINOR INJURIES OF THE FOOT, WITH SPECIAL REFERENCE TO WORKMEN'S COMPENSATION.

HOWAT (*The Practitioner*, June, 1919) notes that the great importance to the community of these injuries, owing to their frequent occurrence and many associated interests, cannot be gainsaid, and any tendency to their inadequate treatment calls for careful consideration by medical men, particularly on account of the increasing public relations of those engaged in contract practice.

Both employers and insurance companies are becoming quick to scrutinize the nature of treatment given, since in the interpretation of the Workmen's Compensation Act by the courts it has been decided that employers are not liable for a continuing incapacity due, not to the accident, but to negligent or improper treatment. Thus medical men treating compensation cases may find themselves called upon in court to explain and even to justify their treatment.

The temptation to malinger that the operation of the Workmen's Compensation Act holds out to unscrupulous patients is another and a very strong reason for insuring that treatment should not be liable to be exploited by those inclined to exaggerate their disabilities for fraudulent purposes.

In some respects the treatment very commonly given in many cases of minor injuries of the lower limbs can be altered easily and for the better. Rest should still remain the basis of treatment.

As a convenient illustration for the argument one may take "crushed toes," a kind of injury nowhere rare, and particularly common wherever heavy industries are largely carried on. The fall of a heavy object upon them is the usual cause of toes being crushed. By reason of its size, and probably of its position, the great toe is

most exposed to this injury, from which the last segment rarely escapes. The damage done usually includes laceration of the nail-bed, often accompanied by more or less tearing of the surrounding flesh, fracture of the phalanx, particularly of its terminal corona of bone (shown by *x*-rays), bruising of the soft parts proximal to the nail and of the interphalangeal joint. The injured member is almost invariably foul. The nail in many cases is not split, but raised and loosened from its bed by effused blood and kept in that situation by a layer of solid dirt under the free edge of the nail. The ensuing condition is that of traumatic inflammation in a septic part. The danger incident to this condition and the duration of crippling are decided by the treatment adopted. Efficient treatment not only limits danger from septic absorption, it also minimizes subsequent disability. In inflammatory conditions not severe enough to cause gross loss of tissue the resulting sclerotic changes, the chief cause of functional impairment, are proportionate to the duration of inflammation. Thus the prime objects of treatment are two, namely, to limit the inflammation reactionary to the mechanical injury, and to prevent this reactionary inflammation being aggravated and complicated by the septic material so abundantly present.

Rest is freedom from morbid irritation. The morbid irritation from which these cases have to be protected is of three kinds: Mechanical, *e.g.,* boot pressure or friction; congestive, *e.g.,* from dependent position; chemical, *e.g.,* bacterial sepsis. The three corresponding means of counteracting these morbid agencies are: (1) Immobility; (2) elevation; (3) cleanliness. Reasonably adequate means to these ends are of the simplest and are obtainable everywhere.

The routine of a case so treated is somewhat as follows: The patient, having reached home, soaks the foot in a basin or bath of soap-suds kept as hot as can be borne by the addition of a little boiling water every minute or so. The bath should last for fifteen or twenty minutes. It softens the skin, loosens dirt, and soothes the patient. With some clean material (towel, pockethandkerchief, lint, cotton-wool) the entire foot is rapidly mopped clear of gross dirt. Particular attention is paid to the hollows between and below the toes. All toe-nails are cut short, and gross dirt gently scraped away from beneath and around them. For this purpose a scissors or knife-blade answers well. Any very slender tags of skin or nail on the crushed toe are snipped off. Massive fragments are not removed at this stage. If the nail is not split, no attempt is made to let out the blood beneath it. Boracic acid powder is sprinkled over the toe, which is enveloped in one or two layers of boric lint fairly heavily wet with hot water. This is kept in place with only a few turns of open-woven bandage. The patient is then put to bed, with his foot raised.

Whatever member of the household is to look after the patient should be present, if possible, at the first dressing in order to see what is done, and to receive instructions for the future. These consist of directions to scrub hands in hot water and soap before dealing with the toe; to keep the dressing moist by dropping a little hot water from time to time on the bandage (this plan avoids unnecessary disturbance of the dressings). Three times a day (the first early, the last at bedtime) the dressings are removed and the foot soaked for a quarter of an hour in hot soap-suds. Then, after gentle drying, the toe is dressed as before. One of these three daily baths is timed to suit the medical attendant's convenience. He sees the state of the toe, and does any necessary trimming and scraping away of tags and thickened epidermis. In about four days the nail will be loose enough to be removed easily and entirely. On the removal of the nail there are sure to be some skin tags requiring removal. Thereafter treatment is continued much as before until the ulcerated surface left on the nail's removal is completely covered with epidermis, the frequency of bathing and size of dressing lessening as healing advances.

That ambulatory treatment of recent foot injuries is commonly practiced, that it occasions unnecessary prolonged unfitness for work and engenders other evils, are facts well known to those who have occasion to examine and report on many "compensation" cases. No doubt the adoption of ambulatory treatment is partly due to pressure of work with its many and various attendant ills for all concerned.

COMPULSORY REPORTING AND COMPULSORY TREATMENT OF VENEREAL DISEASES.

MASON (*Boston Medical and Surgical Journal*, July 10, 1919) quotes the Surgeon-General to the effect that from the time the United States entered the war in April, 1917, to September, 1918, the loss to the army from venereal diseases represented 2,295,000 days of service. With this fact in mind let us stop and think how prevalent gonorrhea is among our young adult male population, for we are also informed that about eighty-five per cent of all cases of venereal diseases treated in our army during the past year were contracted by the men in civilian life before they entered the military service. We learn from the same source that "prostitution in the United States has resulted in the infection (directly or indirectly) with syphilis of almost a half million men in what is virtually our reserve army;" that "venereal diseases present the most serious communicable disease problem of the war." We are further confronted by the fact that in the army the number of cases of venereal diseases contracted before and after enlistment was in the ratio of five to one. This shows the great prevalence of this scourge in civil life, and that by a system of education, healthy recreation, repression of prostitution, isolation, and treatment, which would be entirely applicable to civil communities, the venereal rate has been cut down.

It has been estimated, and very conservatively, that five per cent of all people who contract syphilis at some later time develop general paralysis of the insane. Definite figures under present conditions would be hard to get relative to the prevalence of syphilis among the adult population, but eight per cent appears to be a fairly low estimate. Blood examinations of all patients admitted to our State hospitals show that from twelve to eighteen per cent give a positive reaction. Of 1698 temporary cases admitted to the psychopathic department of the Boston State Hospital, 8.4 per cent, over 135, were suffering from a mental disease due to syphilis. As the average cost per week to care for our insane is, at the present time, approximately $6.50 per patient, the cost to the State for the care and treatment of these 135 syphilitics for one year would be $45,510. And syphilis, as well as gonorrhea, is a preventable disease.

The Federal government took action early in July, 1918, to assist the States in the control of venereal disease by the passage of the Chamberlain-Kahn bill as a section of the Army Appropriation Bill.

The following is a summary of the act as it appears in the Army Appropriation Bill:

Section One creates an Interdepartmental Social Hygiene Board to consist of the Secretary of War, the Secretary of the Navy, the Secretary of the Treasury, and the Surgeons-General of the Army, Navy, and Public Health Service; or of representatives designated by the respective secretaries; the duties of said board to be:

1. To recommend rules for expenditure of $1,000,000 allotted to the States for the purposes authorized under Section Two of this Chapter.
2. To select the institution and fix allotments under Section Six.
3. To recommend such general measures as may seem necessary to carry out efficiently the purposes of this Chapter.
4. To direct the expenditure of the sum of $100,000 referred to in Section Seven.

Section Two authorizes the Secretary of War and the Secretary of the Navy to adopt measures assisting the States in caring for diseased persons (in detention homes) in order to protect from venereal infection soldiers and sailors of the United States.

Section Three establishes in the Bureau of the Public Health Service a division of venereal diseases.

Section Four provides that the duties of the Division of Venereal Diseases be:

1. To study and investigate the cause, treatment, and prevention of venereal diseases.
2. To coöperate with State Departments of Health for the prevention and control of such diseases within the States: and
3. To control and prevent the spread of these diseases in interstate traffic.

Section Five appropriates $1,000,000 to be expended in carrying out the provisions of Section Two.

Section Six appropriates $1,000,000 annually for two years to be allotted to the States on the basis of population for the use of their departments of health in the prevention, control, and treatment of venereal diseases, the payment to each State for the fiscal year beginning July 1, 1919, conditioned on the States raising an equal amount; but payment for the fiscal year beginning July 1, 1918, to be without such condition. It further appropriates $100,000 annually for two years to be paid to suitable institutions for scientific research for the purpose of discovering more effective medical measures in the prevention and treatment of venereal diseases. It further appropriates $300,000 annually for two years to be paid to institutions qualified for scientific research for the purpose of discovering and developing more effective educational measures in the prevention of venereal diseases, and for the purpose of sociological and psychological research related thereto.

Section Seven appropriates $200,000 to defray the expense of establishing and maintaining the Division of Venereal Diseases; and appropriates $100,000 to be used under the direction of the Interdepartmental Social Hygiene Board for any purpose for which any of the appropriations made by this Chapter are available.

Section Eight provides that the terms "State" and "States" used in this Chapter include the District of Columbia.

The Commonwealth of Massachusetts received $36,603.94 as its allotment under this Act, and the State Board of Health took timely and efficient action so far as lay within its power by adopting the following Special Regulations relative to reporting venereal disease:

"Gonorrhea and syphilis are declared diseases dangerous to the public health, and shall be reported in the manner provided by these regulations promulgated under the authority of Chapter 670, Laws of 1913.

"Gonorrhea and syphilis are to be reported (in the manner provided by these regulations) on and after February 1, 1918.

"At the time of the first visit or consultation the physician shall furnish to each person examined or treated by him a numbered circular of information and advice concerning the disease in question, furnished by the State Department of Health for that purpose.

"The physician shall at the same time fill out the numbered report blank attached to the circular of advice, and forthwith mail the same to the State Department of Health. On this blank he shall report the following facts:

Name of the disease.
Age.
Sex.
Color.
Marital condition and occupation of the patient.
Previous duration of disease and degree of infectiousness.

"Whenever a person suffering from gonorrhea or syphilis in an infective stage applies to a physician for advice or treatment, the physician shall ascertain from the person in question whether or not such person has previously consulted with or been treated by another physician within the Commonwealth and has received a numbered circular of advice. If not, the physician shall give and explain to the patient a numbered circular of advice and shall report the case to the State Department of Health, as provided in the previous regulation.

"If the patient has consulted with or been treated by another physician within the Commonwealth and has received the numbered circular of advice, the physician last consulted shall not report the case to the State Department of Health, but shall ask the patient to give him the name and address of the physician last previously treating said patient.

"In case the person seeking treatment for gonorrhea or syphilis gives the name and address of the physician last previously consulted, the physician then being consulted shall notify immediately by mail the physician last previously consulted of the patient's change of medical adviser.

"Whenever any person suffering from gonorrhea or syphilis in an infective stage shall fail to return to the physician treating such person for a period of six weeks later than the time last appointed by the physician for such consultation or treatment, and the physician also fails to receive a notification of change of medical advisers as provided in the previous section, the physician shall then notify the State Department of Health, giving name, address of patient, name of disease, and serial number, date of report, and name of physician originally reporting the case by said serial number, if known.

"Upon receipt of a report giving name and address of a person suffering from gonorrhea or syphilis in an infective stage, as provided in the previous section, the State Department of Health will report name and address of the person as a person suffering from a disease dangerous to the public health, and presumably not under proper medical advice and care sufficient to protect others from infection, to the board of health of the city or town of patient's residence or last known address. The State Department of Health will not divulge the name of the physician making said report."

After these regulations had been in operation eleven months, 10,966 cases of venereal disease had been reported to the State Department of Health. This probably represents about 25 per cent of the total number of persons suffering from venereal diseases in the State.

Of this number 1366 were found not to be faithfully following up treatment, and, in accordance with the regulations, were after a certain period of time reported by name. Action by the Health Department returned 995 to treatment, but there remained 341 who could not be located.

The State Board has also established several clinics throughout the State, makes laboratory examinations, and is now able to furnish arsphenamine free to physicians and hospitals.

The author believes that compulsory reporting is necessary, for if the extent of a contagion is not known its control cannot be regulated.

Compulsory treatment is necessary for the successful handling of all cases in which the moral tone or intellectual fiber is so poor that they cannot be trusted to carry out instructions.

There should be a law making all records private.

A health certificate from the local health board showing a negative Wassermann should be filed with the clerk before a marriage license can be granted.

Hospital facilities provided which would be available for the whole community. This could be done with little expense to the State by the passage of a law requiring all general hospitals to provide a ward for the care and treatment of venereal diseases; and the establishment of a camp for girls at the Sherborn State Reformatory.

At the present time, excepting two or three institutions in the State, if a person is suffering from a venereal disease he is barred from admission to a general hospital for treatment.

Custodial care for the feeble-minded, especially the feeble-minded prostitute, is important for persons of a physical adult age, but a mental age of a child, diseased, and with no moral fiber in their make-up, who, if allowed to remain in a community, will not only return to their old haunts but in many cases beget degenerates to be cared for at the expense of the State.

Those able should be required to pay for the treatment.

Physicians as well as others who fail to comply with the laws, rules, and regulations established should be liable to penalty.

THE QUARANTINE TREATMENT OF DISEASED PERSONS IN LOUISVILLE.

BARNETT (*Urologic and Cutaneous Review*, August, 1919) states the following are the standard rules for examination and discharge of venereal patients furnished by the committee in the Surgeon-General's office:

A person infected with the treponema pallidum may be considered, from a public health point of view, to be free from danger of transmitting the infection when a complete clinical examination, in which special emphasis is laid on the thorough exploration of the skin and mucous membrane and genito-urinary tracts, shows the absence of any area from which infectious matter can be disseminated.

When a patient is discharged as non-infectious under the above ruling, he must, of course, be plainly advised that his disease

is not cured, and that although non-infectious at the time, he may subsequently become infectious to others through contact, and that the disease will probably be transmitted to his offspring until he is actually cured by a proper course of treatment carried on for a definite period. He should, therefore, be warned to remain under observation until such time as complete cure is effected.

In the light of our present knowledge the following seem to be the minimum requirements for cure: No case should be considered as cured for at least one year after the termination of treatment, and unless the following conditions have been satisfied:

(*a*) No treatment for one year during which time there have been no symptoms, no positive and several negative Wassermann reactions; (*b*) a negative provocative Wassermann reaction; (*c*) a negative spinal fluid examination; (*d*) a complete negative physical examination, having special reference to the nervous and circulatory systems; (*e*) a luetin test may also be included.

In so far as gonorrhea is concerned the following four requirements must be met before discharging cases as non-infectious:

1. Freedom from discharge.
2. Clear urine; no shreds.
3. The pus expressed from the urethra by prostatic massage must be negative for gonococci on four successive examinations at intervals of one week.
4. After dilatation of the urethra by passage of a full-sized sound, the resulting inflammatory discharge must be negative for gonococci.

No urethral or vaginal discharge.

Two successive examinations for gonococci of secretions of the urethra, vagina, and the cervix, with an interval of forty-eight hours, and in four successive weeks.

(This rule is laid down as the best practical method at our disposal at present, but it is fully realized that such negative findings may not in every instance be conclusive as to freedom from infection, and the patient should be requested to return at frequent intervals for subsequent examination. In fact, all the foregoing rules governing discharge as non-infectious are tentative and will be subject to revision should the combined experience of directors of clinics or others indicate the necessity therefor.)

Technique for procuring smears from the cervix and urethra: Slides should be prepared from the secretions procured from the urethra and cervix as well as from secretions which may be expressed from Skene's and Bartholin's glands. In preparing urethral slides the finger should be inserted in the vagina and expression made on the floor of the urethra from within outward, the cotton-tipped probe being then introduced well into the meatus. In procuring smears from the cervix a vaginal speculum should be introduced and the cervix well exposed. All secretions should be mopped away from the external os before taking the smear. After the cervix is well dried, a probe, tightly wound with cotton, should be inserted into the cervical canal and rotated several times. It is exceedingly important that the secretion from the cervix shall be in reality cervical secretion and not mucus or pus from the vagina. It is advised that two or three slides be prepared from both urethra and cervix.

The ideal plan for examination for the gonococcus in the female, according to the latest work of Cabot on Urology, is as follows: The patient to have no douche or bath, no washing of the parts whatever, for at least twelve hours before examination, nor pass urine for three hours or more before examination. Separate the labia majora and take specimen from labia minora, another from vestibule, another from external meatus, vaginal orifice, vagina, Bartholin's glands, and cervix. The meatus is opened and washed with saline solution and dried by pledgets of gauze. A sterile cotton swab on an applicator is inserted and secretion taken and spread on slide or slides; then the orifice of each of Skene's ducts is exposed and pressure made below the floor of the anterior portion of urethra against the vestibule or anterior wall of vagina close to vaginal outlet, and

the secretion taken and placed on slides; then the whole urethra is stroked from bladder to meatus through anterior vaginal wall and secretion placed on slides. After washing vagina and drying, urine is obtained in two sterile glasses, after which the urethroscope is used and mucus and pus obtained for examination. Observations are made for lesions in urethra, and careful examination should be made of the cervix, Bartholin's glands, and vagina at the same time.

In December, 1918, a corps of psychological examiners under Captain H. B. Cummings, from Camp Zachary Taylor, made a mental test by the Sanford-Binet method of one hundred and twenty-eight women in quarantine, of whom eighty-six were white and forty-two were colored. The report shows that sixty-four gave a mental age of ten years or under, thirty-four gave a mental age of from ten to twelve years, and thirty gave a mental age of twelve years or more. Those of ten years or less are decidedly feeble-minded; those from ten to twelve are high-grade morons; and those above twelve years are mentally normal.

REVIEWS.

THE MEDICAL TREATMENT OF CANCER. By L. Duncan Bulkley, A.M., M.D. The F. A. Davis Company, Philadelphia, 1919. Price $2.75.

Many of the profession are familiar with the writings of Dr. Bulkley upon this, his favorite topic. As is well known, Dr. Bulkley is one of those who believe that cancer is not so definitely a surgical problem as many of the profession believe. His endeavor always is to emphasize the medical aspects of the malady, to bring forward the idea that systemic conditions are the underlying and responsible causes, and that this systemic condition can be materially modified by dietetics and otherwise. So firmly is he convinced of this view that he has made many addresses and written many papers in support of it. Much of the material in this, the third, volume which he has contributed to this subject is composed of the material which he has presented for the consideration of his medical colleagues in lectures. He gives statistics as to the frequency and mortality of cancer, and deals with its dietetic and medical treatment and with precancerous conditions. Possibly a goodly number of the profession will differ from the views which he expresses in Chapter XVI in answer to the question, "What should the medical practitioner do about cancer?" He admits that most people say "Leave it to the surgeon," but he is not so enthusiastic as others in following this advice, for he believes that the influence of a nitrogenous diet in the production of cancer is a predominating element in the causation of this malady.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., assisted by L. F. Appleman, M.D. Volume III, September, 1919. Lea & Febiger, Philadelphia, 1919.

The present issue of Progressive Medicine is somewhat smaller than usual because of the dearth of medical literature, induced by the great war, in the subjects with which this volume deals. As in many years past Dr. William Ewart, of London, contributes the article upon Diseases of the Thorax and its Viscera, including the heart, lungs, and blood-vessels; Dr. Gottheil, of New York, that upon Dermatology and Syphilis; Dr. Edward P. Davis reviews quite exhaustively the literature of the past twelve months in Obstetrics, and Diseases of the Nervous System are discussed by Dr. William G. Spiller, both of the latter authors being Philadelphians. The general practitioner will find as much of practical interest and usefulness in this issue as in its predecessors.

THE FUTURE OF MEDICINE. By Sir James Mackenzie, F.R.S., M.D., F.R.C.P. The Oxford University Press, New York, 1919.

It goes without saying that this latest contribution of Sir James Mackenzie to medical literature possesses all the charm and lucidity that his earlier contributions have shown. As may be imagined, the volume consists of a series of essays divided into three parts. The first is called "Critical" and deals with medical education, the specialties in medicine and original research; the second part deals with his "Personal Experiences" as to the opportunities of the general practitioner, the investigation of pain and of irregular heart action, the recognition of auricular fibrillation, his favorite topic, and mitral stenosis, with observations on the effects of drugs; the third part he calls "Constructive," in which he deals with the principles in research, the valuation of symptoms, the use and abuse of laboratory methods, and the estimation of the functional efficiency of an organ. All through his text he emphasizes the value of bedside study as opposed to pure laboratory investigation.

Few men have done as much to advance the study of circulatory disorders as Sir James. He has had a host of followers: first, because of his original investigations and their practical results; secondly, because of the very interesting way in which he presents his views.

As we pointed out in the review of one of his earlier books, we cannot always agree with him in some of his rather dogmatic conclusions, but the profession and the laity owe a debt of gratitude to him because he has made certain dark places in cardiac pathology light and in doing so has aided us in preventing much suffering and saving life.

COLLECTED PAPERS OF THE MAYO CLINIC. Volume X, 1918. W. B. Saunders Company, Philadelphia and London, 1919.

Again comes what may be regarded by the practicing surgeon as the most important book of the year, covering a wide field of surgical achievement and carrying, as it does, lessons based on sound common sense and a rational correlation between the clinic and the laboratory. Many of these papers have appeared as a part of current literature. Their collection in a single volume makes them readily available.

Among the contributors we find Balfour, Braasch, Carman, Conner, Judd, Kendall, MacCarthy, Mann, the two Mayos, Pemberton, Peterson, Rosenow, Sistrunk, Stokes and Taylor.

Among the topics discussed we find Syphilis of the Stomach, 40 cases in which there were demonstrable lesions and therapeutic cure was proven; Cautery Excision in Gastric Ulcer; the Treatment of Peptic Ulcer by Gastro-enterostomy; The Study of the Etiology of Cholecystitis and its Production by Streptococci; An Experimental Study on the Function of the Gall Bladder; The Recurrence of Symptoms Following Operations on the Biliary Tract; Surgical Treatment in Cirrhosis of the Liver and its Complications; Secondary Peritonitis: Its Cause and Cure; Chronic Ulcerative Colitis, A Review of 117 Cases; Fistula of the Colon; Practical Considerations in Regard to Permanent Colostomies; the Effect on the Kidney of Uretero-vesical Anastomosis, Experimental and Clinical; The Principles of Thyroid Surgery; Studies on Cholesterol; Blood Transfusion; Clinical Studies in Cutaneous Aspects of Tuberculosis; Skin-grafting; Atropine and Induced Anti-Anaphylaxis as a Protection Against Acute Arsphenamin Reactions; The Etiology of Epidemic Poliomyelitis; Report on the Treatment of 58 Cases of Epidemic Poliomyelitis with Immune Horse Serum; Demonstration of Immune Opsonins for the Pleomorphic Streptococcus in Experimental Poliomyelitis in Monkeys; The Use of Heat and Radium in the Treatment of Cancer of the Jaws and Cheeks; Partially Autolyzed Pneumococci in the Treatment of Lobar Pneumonia; The Treatment of Empyema; Fractures of the Neck of the Femur; Derangement of the Semilunar Cartilages of

the Knee-joint; Results of the Surgical Treatment of Spinal Cord Tumors; the Use of Sodium Bromide in Radiography; A Schreiber Adapter; The Treatment of Menorrhagia with Radium; A Prophylactic Inoculation Against Respiratory Infections During the Present Pandemic of Influenza; Treatment of Prematurity; Further Experimental Studies on Surgical Shock; Modifications of Some Civil Practices Suggested by the War.

The book is beautifully illustrated, and its teachings carry with them that weight of authority which the Mayos alone have the power of giving. It is an indispensable part of both the surgeon's and internist's library.

MENDERS OF THE MAIMED. By Arthur Keith, M.D. (Abdn.), F.R.C.S. (Eng.), LL.D. (Abdn.), F.R.S. Henry Frowde, Oxford University Press. Hodder & Stoughton, London, 1919.

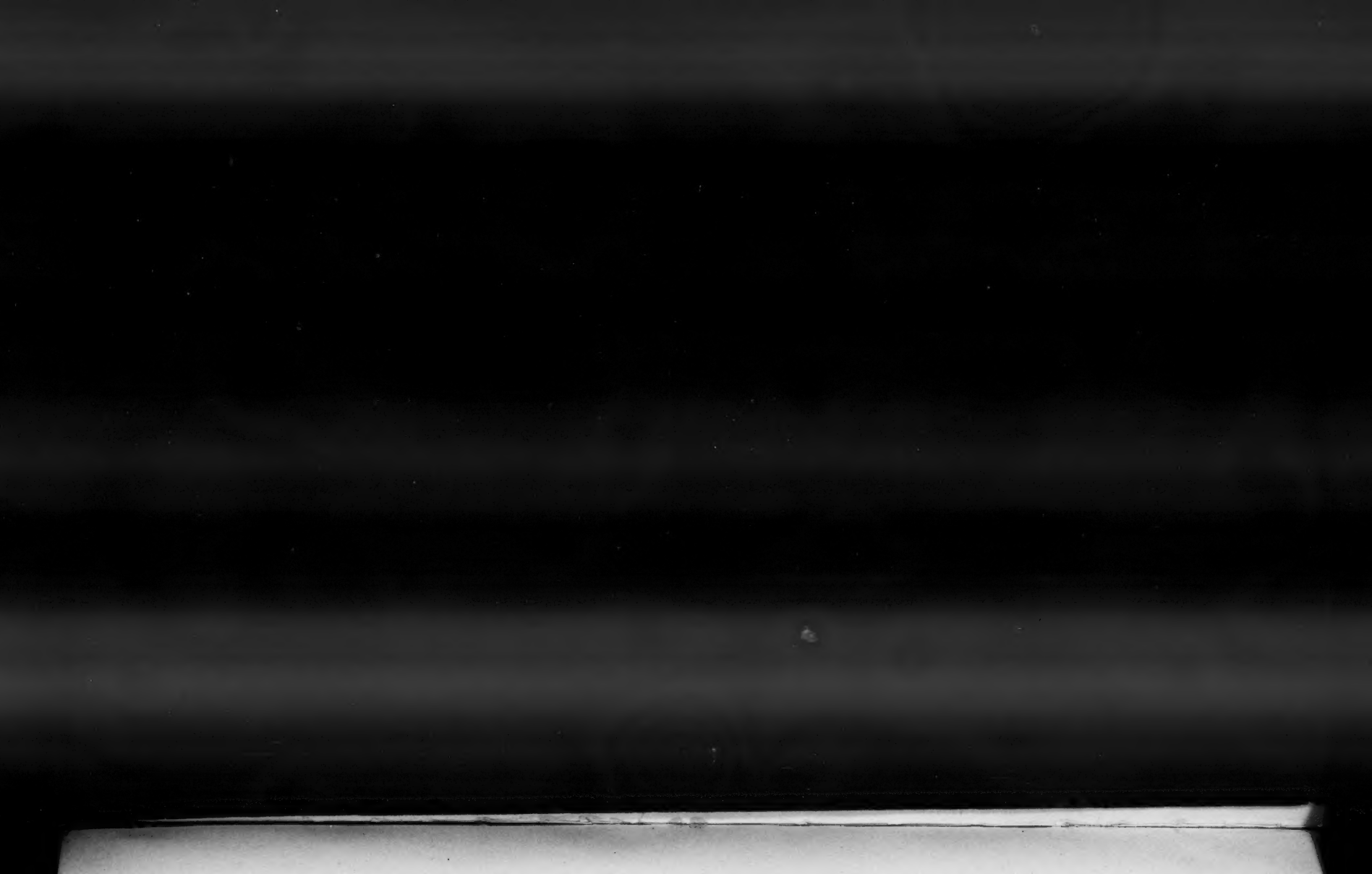
Arthur Keith, as might be expected of the distinguished conservator of the Museum of the Royal College of Surgeons, has found it desirable to reëxamine the foundations of medical science and practice as applied to the restoration of movement to thousands of men who have been maimed or lamed in war, basing his teaching in this book on a series of lectures given by him, and on the serologic and anatomic principles underlying the treatment of muscles, bones, and joints. There is a basic principle accentuated by John Hunter, to the effect that we can help the sick and the maimed in only one way: by aiding and abetting the natural recuperative processes of the body. Our methods must be based on a knowledge of these mechanisms.

Keith has sought to guide his reader to the hospital wards, physiological laboratory, dissecting rooms and private workrooms in which the great advances of orthopedic surgery were made, and to introduce to them the "Menders of the Maimed" as they were in the heyday of life.

His various chapters are devoted to the Orthopedic Principles of John Hunter; John Hilton's Principles of Treatment; The Principles and Practice of Hugh Owen Thomas; The Introduction of Tenotomy; Marshall Hall and the Bearing of His Discoveries on Orthopedic Practice; Some Matters Relating to the Mechanism and Management of Muscles; The Degeneration and Regeneration of Nerves; The Introduction of Tendon Transplantation; thereafter The Introduction of Certain Orthopedic Methods to British Surgery; The Forerunner of the Modern American School of Orthopedic Surgeons; Movement as a Means of Treatment; The Introduction of Gymnastics and Massage to Surgery; The Foundation of Our Knowledge of Bone Growth by Duhamel and Hunter.

THE MEDICAL AND SURGICAL ASPECTS OF AVIATION. By H. Graeme Anderson, M.B., Ch.B., F.R.C.S. With chapters on Applied Physiology of Aviation by Martin Flack, M.A., M.B., and the Aero-neuroses of War Pilots by Oliver H. Gotch, M.B., Ch.B., M.R.C.P. (London), and an Introduction by the Right Hon. the Lord Weir of Eastwood, P. C., Secretary of State for the Royal Air Service. Henry Frowde, Oxford University Press. Hodder & Stoughton, London, 1919.

From the subject alone the book will necessarily excite wide attention. The subject has been handled in such fashion as to make it as entertaining as a novel—a really good novel. The reader forgets that he is unconsciously absorbing lessons both medical and surgical, given him by one who has learned them by a large experience. There are many plates and illustrations bearing upon airships, their eccentricities, and the injuries resulting from their fall and collision.

The chapters are devoted to The History of Medical Interest in Aeronautics and Aviation; The Selection of Candidates for Aviation; The Applied Physiology of Aviation; The Psychology of Aviation; The Aero-Neuroses; Aeroplane Accidents; The Surgery of Aviation; The Injuries and Destructive Effects of Aeroplane Bombs and Aeroplane Arrows; Aeroplane Dope Poisoning; and a Glossary of Aviation Terms and the Literature and Index.

A book equally delightful to him who reads for pleasure or for profit.